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Appreciations of the Editor Emeritus

UPON the announcement of the appointment of Mazÿck P. Ravenel, M.D., as Editor Emeritus of the *American Journal of Public Health* after 16 years of devoted service as Editor and Editor-in-Chief, many letters of appreciation of Dr. Ravenel as a man, as a scholar and as an inspiration to younger men have been received. The Editorial Board has asked some of the writers to express their thoughts for the *Journal* and they are printed here in token of a widely-held sentiment.

ROBERT WILSON, M.D., Dean, Medical College of the State of South Carolina, Charleston, S. C.

Among the Huguenots who fled from France after the revocation of the Edict of Nantes and settled in the Province of Carolina was René Ravenel, of Vitré in Brittany, sieur de la Massais. Shortly after reaching Charles Town he married Charlotte, daughter of Pierre de St. Julien, sieur de Malacare, who had emigrated to Carolina at the same time. From this union derive all in South Carolina who bear the name Ravenel. Later marriages introduced other Huguenot strains, such as Porcher, Mazÿck, Gaillard.

From the earliest days of the Colony members of the Ravenel family have been conspicuous in business, in medicine, and in science. Notable among these was Dr. Edmund Ravenel, Professor of Chemistry in the first faculty of the Medical College of South Carolina, at one time serving as dean (1829–1834). He achieved national distinction as a conchologist, and his catalogue of shells, which was published in 1834, was the first work of its kind to appear in America.

His nephew, Dr. St. Julien Ravenel, under the inspiring influence of Louis Agassiz and Dr. J. E. Holbrook, after a few years spent in the practice of medicine, devoted himself to the pursuit of chemistry. His work in agricultural chemistry and his discovery of the value of the phosphate deposits near Charleston were potent factors in the rehabilitation of South Carolina after the war between the states. It was Dr. Ravenel's inventive genius which produced the torpedo boat Little David, whose attack on the Ironsides, the flagship of the squadron blockading Charleston during the war, initiated a new type of naval warfare.

In the field of botany Henry W. Ravenel, LL.D., achieved international reputation. In the forefront of American scientists, he was also a correspondent and member of several European botanic societies.

Such is the background of energy, of culture, and of eminent scientific achievement inherited by Dr. Mazÿck Porcher Ravenel, and his own life of fruitful cultivation of the field of medical science has exemplified the best ideals of the family tradition.

WILLIAM CHARLES WHITE, M.D., Chairman, Committee on Medical Research, National Tuberculosis Association, Washington, D. C.

"Dr. Ravenel: Am I right or wrong in understanding that the German Commission has ascertained the bovine type of the bacillus to be the cause of a case of miliary tuberculosis of the lungs?

"Prof. Koch: I have asked whether any case exists of tubercle bacilli of the bovine type in pulmonary tuberculosis, and not in miliary tuberculosis.

"Dr. Ravenel: Am I right or wrong in saying that the German Commission has published a case of that kind?

"Prof. Bank: I think you are right."

These few sentences are taken from the famous conference in camera of the Sixth International Congress on Tuberculosis in Washington in 1908 when a group of scientists from many nations assembled to question Prof. Robert Koch on the relation of the bovine bacillus to human disease. They express as well as any the character of Mazÿck P. Ravenel. Always seeking the truth and expressing it in forthright manner.

Dr. Ravenel has been a power in tuberculosis experiment and control. His earlier work in the Veterinary Department of the University of Pennsylvania and in the State Livestock Sanitary Board of that state with Pearson and Gilliland had a great influence on the thought of that time. His demonstration of the rapid appearance in the thoracic duct of tubercle bacilli introduced into the intestines of the dog gave excellent proof that lung infection could come from infection through the gastrointestinal tract.

In recent years Dr. Ravenel has been interested in the British work of Stanley Griffith and others who found fairly frequently bovine tubercle bacilli to be the cause of pulmonary tuberculosis in man in regions where little control of bovine tuberculosis was carried on. But in the United States, where an intensive bovine tuberculosis eradication program has been pursued, the few attempts made have failed to show their presence in human pulmonary tuberculosis in this country.

Dr. Ravenel's name, now and in the future, will be remembered by those interested in tuberculosis literature, either human or bovine, for his active laboratory and educational work in this field.

ARTHUR W. HEDRICH, Sc.D., Chief, Bureau of Vital Statistics, State Department of Health, Baltimore, Md.

What a godsend Dr. Ravenel's sixteen years of service as editor have been to the Association may be judged from the fact that the *Journal* had had four editors in less than eight years prior to his incumbency.

When I became secretary of the Association, in 1917, that officer was ex-officio and by financial necessity editor of the *Journal*. Most of the work was done at night, and the principal worries, as I remember them, were to get the editorials written, and to erase enough authors' corrections from the proofs to keep the printer's bill within bounds.

The *Journal* was practically insolvent. I think that it is now proper to record that it was Dr. W. A. Evans, then president of the Association, who, to pay off the printer, made a donation of $1,500, which he insisted should be anonymous. He and his successor as president, Dr. Lee K. Frankel, also stimulated activities which, within about five years, doubled the membership of the Association, and initiated exhibits and other revenue measures which increased the budget of the Association from $15,000 to about $50,000.

It may have been the erroneous crediting of an article by W. H. Frost to Trask on the cover of the *Journal* which

dramatized the need of editorial assistance, and resulted in the appointment of John Ritchie, Jr., editor of the "Clinic" column of the *Boston Transcript*, as associate editor of the *Journal* in 1918. When the Association moved to New York, in 1921, Kenneth Gould succeeded him, but resigned before long to accept a more lucrative position. Dr. Henry Vaughan served as Chairman of the Editorial Committee until 1924, when Dr. Ravenel took over. Those who have been close to the *Journal* realize how great a boon to the Association it has been to have had, for sixteen years in charge of the *Journal*, a man of Dr. Ravenel's scholarly attainments, scientific background, and devotion to the cause.

HENRY F. VAUGHAN, DR.P.H., Commissioner of Health, Detroit, Mich.

On the occasion of the fifty-first annual meeting in Cleveland, in 1922, the members of the American Public Health Association approved a revision of the Constitution and By-Laws which materially strengthened our organization, provided for the creation of its standing committees, and established a Fellowship for those members who have attained a degree of recognition in our chosen avocation. At this same meeting, Dr. Mazÿck P. Ravenel was selected as a member of the Editorial Committee, and took over the responsibilities for editorials in the *Journal*, which at that time greatly needed financial as well as literary support.

Since that momentous meeting in Cleveland, our *Journal* has grown from an ordinary association record book into the outstanding public health publication in this country and attained a high degree of respect and recognition in other lands. Through its original contributions and its editorial comment, it has become an indispensable part of the armamentarium of every public health worker. This is due to the untiring efforts of Dr. Ravenel whose dream of a great publication has been fully realized.

As a member of the small group who served with Dr. Ravenel from the time that he assumed this obligation of love for, and belief in, our association and its purposes, I have witnessed the inspiration which he has given to others and the friendships and associations which have been created through mutual professional interest.

I am delighted to hear that Dr. Ravenel will continue this outstanding service which he has given us of the public health field by maintaining an association with the *Journal* and the new editorial board.

C. C. YOUNG, DR.P.H., Director of Laboratories, Michigan Department of Health

I have known Dr. Ravenel for over thirty years and I was associated with him for many years on the editorial board of the *American Journal of Public Health*. Whenever, through indolence or ignorance, I was unable to get information on anything, my quest ended by writing to Dr. Ravenel. In not one instance did he ever fail to produce the exact information, page and paragraph, I needed. He has a most amazing fund of practical and useful information.

However, the thing that has always endeared Dr. Ravenel to me is his love of puncturing balloons. When some person set himself up as an oracle, invariably Dr. Ravenel would find the weak spot and without hesitation proceed to annihilate that person. He started young. In the early 1900's, I think it was 1901, he took issue with Koch and announced definitely at the International Conference for Tuberculosis that Dr. Koch did not know what he was talking about—that there was a definite difference between bovine and human tuberculosis and that a

human being could be infected with bovine tuberculosis. I do not know of another person, no matter how right he might think he was, who would have had the temerity to disagree with Koch.

Throughout Dr. Ravenel's long scientific and editorial career, that trait of character has never been sacrificed to expediency. I always have thought of him as the paternal castigator—he can give a spanking and make the recipient like it.

RICHARD H. SHRYOCK, Chairman, The History Department, University of Pennsylvania, Philadelphia, Pa.

There are many better qualified than I to express appreciation of Dr. Ravenel's direct services to the public health—past, present, and future. As an historian, however, I welcome this opportunity to emphasize the value of his work for social history in general, and for the story of public health developments in particular. Every profession needs a few leaders who can at times stand off from the pressing problems of the moment and so view the past as to enlighten their colleagues on the direction in which they have been moving. Dr. Ravenel has done much, in this way, to provide an historical perspective on the whole public health program in this country, and this is no small service to his profession.

At the same time, Dr. Ravenel's historical studies are of great potential value to all social historians. As the latter come to realize more clearly the vital significance of the story of health and disease in the evolution of any society, they will increasingly appreciate his pioneer contributions to the medical history of the American people. The volume which he edited for the Association in 1921, entitled "A Half Century of Public Health," will long remain one of the essential references for those concerned with the half-century following 1870. Certain of his articles, moreover, are invaluable guide posts to lay interpreters of the past, since they indicate clearly the relative significance of various aspects of the history of disease. This is notably true of his essay on "Endemic Diseases Versus Acute Epidemics," which appeared in the *Journal* in 1920.

I should like to conclude this brief tribute on a note of personal appreciation. Some years ago, when a graduate student, I made fumbling attempts to express the importance of the public health in the social development of the nation. There was at first small encouragement from historians, who felt that all this might be medicine but that it hardly was "history." At this point I happened to write Dr. Ravenel, and I shall never forget the care and kindness he displayed in encouraging an entirely unknown youngster to go ahead in what was then an unorthodox historical field. I am sure that Dr. Ravenel will continue in the future to lend similar encouragement and leadership to all of us who share his enthusiasms.

JOHN F. NORTON, PH.D., Head, Bacteriological Department, The Upjohn Company, Kalamazoo, Mich.

We see Dr. Ravenel as a gilt edged volume of the *American Journal of Public Health*—a consolidation of sixteen years of editorial endeavor to produce a journal of which we are proud. A portrait of the man emerges from rereading letters received through a portion of his period of service. Joy in editorial work is evident, but at times he has found difficulty in maintaining a patient attitude toward authors who are unable to write good English, who submit articles of unnecessary length, or who indulge in obscure technicalities.

With the realization that editors are accused of all sorts of crimes—carelessness, procrastination, or the prime scientific sin of being behind the times

—he has persisted in his successful ambition to make our journal outstanding in its field, and is proud of the fact that it is read and quoted throughout the world. His own sense of fallibility has led him to seek editorial advice from a variety of individuals. While this is an index of broadmindedness, its more important result has been to give many of us a rare and fully appreciated opportunity to be associated with one who has so much to contribute from so unusual a store of knowledge in the field of public health.

FRIEND LEE MICKLE, SC.D., Director, Bureau of Laboratories, State Department of Health, Hartford, Conn.

I appreciate Dr. Ravenel because he has brought to the *American Journal of Public Health* a breadth of culture and scholarly ability which has lifted the *Journal* to its present high estate as a journal of applied hygiene. He has successfully bridged the difficult gap between research and its practical application. As I look at the wealth of material which Dr. Ravenel has brought us across these sixteen years I am impressed with his alertness and the discerning way in which he has chosen the contents. For his discrimination we are grateful. For his strict avoidance of any taint of commercialism we thank him. For his magnificent historical perspective and for his almost humorously critical comments we can be grateful now in the long perspective of the years. I like a rugged individual, ready to stand for his convictions, with a love for his work, and with absolutely no ax to grind for any living soul. His has been an undivided loyalty to the *Journal* and to the Association. The prospect of his continuing guidance through a transitional stage reassures us as we look forward with confidence to the leadership of Dr. Mustard and the Editorial Board.

J. C. GEIGER, M.D., Director of Public Health, City and County of San Francisco, Calif.

The selection of Dr. Mazÿck Porcher Ravenel to be Editor Emeritus of the *American Journal of Public Health* warrants more than passing comment from students of public health in these United States.

Dr. Ravenel's career has been replete with important and fundamental work affecting the public health of the world; as a teacher of students he is unparalleled; as an editor his comments on the data submitted have always been accurate, unassailable, and markedly helpful to authors; and, best of all, his friendship was always loyal, everlasting and much sought.

As a health officer, may I add, most inadequately, my appreciation of his many accomplishments in the field of public health, and my sincere affection for a great character and gentleman. Long may he live and serve.

JAMES A. TOBEY, DR.P.H., Former Associate Editor, *American Journal of Public Health*, New York, N. Y.

The vitality of this Journal, or of any journal, depends mainly upon the character of its editor. He guides its policies, writes most of its editorials, inspires literary zeal in his associates, and uses proper discrimination in the selection of contributors and commentators. He imbues the magazine with the spirit of his personality, and makes of it a living, vibrant expression of the best professional and public opinion.

All of these things, and more, have been done for the *American Journal of Public Health* by Dr. Mazÿck P. Ravenel during the past sixteen years. As chairman of the editorial committee since 1925 and as editor-in-chief since 1931, he has brought to his task both scientific acumen and literary skill. Under his guidance the Journal has helped to stimulate gratifying progress

in public health. It has served not only as the mentor but as the acknowledged spokesman of an active public health profession.

Those of us who have been privileged to work closely with Dr. Ravenel in the conduct of this *Journal* have found much to admire, and also to revere, in the genuineness of his character and in his rôle as a militant scientist, scholar, and editor. It is fortunate that Dr. Ravenel's wealth of experience and his distinguished service will continue to be available as Editor Emeritus.

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Etiology of the Anemias*

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FOR many years it has been a useful and reasonable assumption that all anemias, other than those following hemorrhage, are due to an increased destruction or diminished production of red blood cells, or a combination of both. These ideas have the appeal of simplicity and are valuable as a working hypothesis. Unfortunately, however, precise methods for measuring either one of these two mechanisms are not available. What evidence there is at present indicates a strong and justifiable trend toward the acceptance of diminished blood production as the more important immediate cause of the common types of anemia. Furthermore, there is information which suggests that this faulty production results from a diminution of some essential component of the erythrocytes, or a defect in the mechanism which controls the rate of their development.

Since it is not the purpose of this article to consider all of the causative factors of every variety of anemia, only the common types and those for which there exists at least a possible means of prevention or control will be discussed. These may be grouped under the broad divisions of (1) the iron deficiency anemias, (2) the anemias of pregnancy, and (3) the macrocytic anemias.

THE IRON DEFICIENCY ANEMIAS

The iron deficiency anemias are of universal importance for several reasons. First, they are exceedingly common although their prevalence has failed to arouse the interest merited; second, it is usually possible to control or, still better, to prevent their occurrence by employing simple and inexpensive measures which are easily administered and completely devoid of harmful effects. These anemias are important not because they produce fatalities *per se*, but as anyone familiar with their clinical picture can readily testify, they contribute greatly to a diminished efficiency, a loss of a sense of well-being, decreased resistance to infection, and in general play a significant rôle in contributing to the disability and the misery of mankind.

There can be no doubt that the nutritional anemia of infancy and childhood, the hypochromic anemia of adolescent girls formerly called chlorosis, the microcytic anemia of pregnancy, and the hypochromic anemia due to blood loss, are all varieties of the same disease which result from a deficiency of available iron in the body. It is logical, therefore, to include the entire group under the broad name of the "iron deficiency anemias." The clinical syndromes presented in all varieties have much in common and differ chiefly because of the age and sex of those afflicted.

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These anemias are of first importance because they occur at any age and in either sex, and are the most prevalent variety observed in clinical medicine. These facts are substantiated by the studies of Davidson, Fullerton, and Campbell, in 1936 [1] who examined the blood of 3,500 persons representing a cross-section of the poor of Aberdeen, Scotland. They found an anemia of the iron deficiency type to be present in 41 per cent of the infants under 2 years; 32 per cent of children of preschool age; 16 per cent of adolescent women; and 45 per cent of adult women. MacKay [2] reports that two-thirds of the women of the hospital class in London had an anemia which she considered to be of this nature. Heath and Patek [3] report that the condition was present in 16 per cent of all women admitted to the wards of the Boston City Hospital. Although a systematic survey has not been made of the incidence of the iron deficiency anemias throughout the United States, clinical experience indicates that it is the most common sort encountered. These figures emphasize that the greatest frequency of this condition is in women and children. Although it is less common in males, nevertheless, it is the most commonly encountered variety in that sex.

In recent years an intensive and profitable study has demonstrated that these anemias are due primarily to the lack of a normal amount of available iron in the body. An inadequate supply of this element means a decrease in the rate of hemoglobin formation with the characteristic findings of hypochromia and diminution in the average size of the erythrocytes. Such an anemia, when uncomplicated, always has a low color index, which is to be expected, as the fundamental abnormality is the inability to synthesize hemoglobin, rather than difficulty in producing red blood cells at a normal rate. The circumstances leading to such a depletion of the body iron are the following: (1) the loss of iron as the result of a severe, acute hemorrhage, or chronic blood loss; (2) a reduced intake of iron in the diet; (3) the added demand for iron of growth, pregnancy, and lactation; (4) the faulty absorption of iron from the intestinal tract; and (5) the inhibiting effect of any infection on the relationship between iron and normal hemoglobin synthesis.

HEMORRHAGE AS A CAUSE OF IRON DEFICIENCY

The most common cause of an iron deficiency anemia of adult life, in either sex, is hemorrhage. A loss of blood means the loss of iron, for 80 per cent or more of the total amount in the body is contained in the circulating hemoglobin. Furthermore, the element is found in the blood in a concentration at least five times that in any other body tissue. All observers agree, however, that uncomplicated acute hemorrhage does not ordinarily result in an iron deficiency. For example, it is estimated that a healthy person might lose 50 per cent of his total blood volume and regain a normal hemoglobin percentage solely by dependence on the normal iron reserves of the body.

Chronic hemorrhage is most likely to occur in the form of continual loss of small, unnoticed quantities of blood over a long interval. It is almost axiomatic that the presence of a hypochromic, microcytic anemia in an adult is the result of protracted bleeding. Such blood loss in females is most likely to be associated with either menorrhagia or metrorrhagia. The importance of an excessive menstrual flow has been greatly underestimated as a cause of this type of anemia, because frequently the patient herself does not recognize that the blood loss is abnormal. The profession is gradually acknowledging the fact that a woman

may lose regularly several times the normal quantity of menstrual blood and yet be completely unaware that this is occurring. Among males the most frequently encountered source of chronic hemorrhage is in the gastrointestinal tract, and this is usually associated with hemorrhoids, peptic ulcer, neoplasm, or cirrhosis of the liver. These causes are also important in females, but their etiological importance is surpassed by menstrual disturbances.

DEFICIENCY OF DIETARY IRON

It is doubtful if a reduction of dietary iron alone will produce a deficiency in the body, although it may exert a most important influence in this respect when other causative factors are operating simultaneously. Theoretically, it is unlikely that a healthy adult could possibly partake of a diet so impoverished in iron as to cause a serious depletion of body reserves. This statement is undoubtedly accurate in relation to males and probably also applies to females. It is known, however, that the frequency of these anemias is much greater in women and children. This is readily understandable because of pregnancy and excessive menstrual loss in the former, and the added demands of growth in the latter.

A study of the dietary habits of adults indicates that the amount of the metal ingested usually exceeds the actual body needs, although the precise optimum intake is unknown. An excess in the diet is desirable as it provides a margin of safety to meet such abnormal demands as those created by hemorrhage, illness with a temporary decreased intake, and impaired absorption. It is estimated that the daily iron intake of an adult, in the United States, varies between 8 and 16 mg. with an average of approximately 12 mg. It is considered by some that about 75 mg. of the element is released daily from the breakdown of hemoglobin. This is based on the assumption that the average life of a red blood cell is 30 days. Balance studies indicate that about 99 per cent of this amount, thus liberated, is conserved by the body and utilized again. The daily iron loss in cell detritus, gastrointestinal secretions, and the urine, has been estimated to be about 1 mg. This amount must be replaced by the diet.

When considering the question of iron intake, the rather troublesome and unsettled problem of the availability of the food iron must be considered. It is a fair statement to say that of all the metal ingested with a general diet probably never more than 50 per cent of it is in the form of available iron. With these statements in mind, it can be assumed reasonably that many persons habitually receive only 6 to 8 mg. of the element daily, which means that 3 to 4 mg. is available to provide for all of the body needs. Even in the case of the healthy, normally menstruating woman, it is probable that this blood loss contributes only about an additional 1 mg. to the daily loss of adults from other sources already stated. This daily average total loss, therefore, of 2 mg. could easily be replaced by the 3 to 4 mg. of available iron in a diet containing only a total of 6 to 8 mg., and an iron deficiency would not result. If these data are accepted, the clinical observation is substantiated that a diet low in iron is rarely by itself a cause of an iron deficiency anemia. It should be recognized as a factor of importance, however, if acting in combination with other causes.

The importance of a subnormal intake is emphasized by the knowledge that the incidence of these anemias is generally proportional to the degree of malnutrition among the inhabitants of any given region. It is possible to predict with reasonable accuracy that if the countries in the present war areas are subjected to famine, there will be

a striking increase in the iron deficiency anemias, provided suitable preventive measures are not instituted. It is also logical to assume that these anemias will not affect normal adult males to any great extent, but will be present chiefly in women and children due to the augmented demands of pregnancy, menstruation, and growth.

INCREASED DEMAND FOR IRON DUE TO GROWTH, PREGNANCY, AND LACTATION

It has been emphasized that the iron deficiency anemias occur most commonly in children, and in women during the years of reproductive life. This at once suggests that, at the periods of greatest growth, which occur in infancy and at puberty, and during the time of life when menstruation is present and pregnancies occur, there is a notable increase in the requirement for iron. These conditions are recognized as highly significant contributing factors in the production of the hypochromic microcytic anemias.

The additional needs for iron during the periods of active growth are quite properly ascribed to the augmented total cellular content of the body and the increasing blood volume. As iron is an essential component of every cell in the body, where it probably has a vital function related to cellular metabolism, there must be some increase in this element during the periods of active growth due to an added number of body cells. This is probably not a significantly large amount. A more important need for iron is created by the increase in total blood volume which means that a greater amount of hemoglobin must be synthesized. Heath and Patek [3] have estimated that the total blood volume has an average increase of 340 cc. between the 14th and 15th years. This when combined with an estimated menstrual loss of 650 cc., would total 1,000 cc. or one-fourth of the total blood volume at that age, which must be produced by the body in addition to other normal demands. While this is readily supplied by a balanced diet, a deficiency will commonly appear if additional factors, such as hemorrhage, an inadequate diet, improper absorption of iron, or infection, are present at this time.

One of the most common types of this anemia is observed in infants, which is the result of a low intake of iron associated with an exclusive milk diet and the increased requirements at this age due to rapid growth. It is most prevalent and of maximum severity at about the end of the first year of life. Although it results chiefly from a diet poor in iron and the normal demands of growth, important contributing factors may be maternal iron deficiency during pregnancy, prematurity, low birth weight, and multiple births. Furthermore, intestinal disturbances, associated with infection, or resulting from improper diet, may greatly reduce the absorption of food iron and so be a major cause of this variety of anemia in infancy.

Anemia resulting from iron deficiency does not occur commonly during the first 6 months of life solely from a low iron intake. This is because an infant has about the same amount of hemoglobin in the body when 6 months of age as at birth, although the body weight may be doubled. The metal is required at this age, therefore, solely to replace that lost from the body and to supply the relatively small amount of cellular iron demanded by growth.

Of course, such an anemia may occur during the first 6 months of life, but it will be due to other factors than a low intake of iron, such as the important contributing factors mentioned. These conditions produce either inadequate fetal storage of iron, or excessive demand for the metal due to the increased rate of growth. Both factors may occur together.

The iron deficiency anemia associated with the gravid state is one of the most important varieties encountered. It will be considered in detail under the heading of the anemias of pregnancies.

IMPAIRED ABSORPTION OF IRON FROM THE INTESTINAL TRACT

There is strongly suggestive clinical and experimental evidence which supports the view that the efficiency of the absorption of iron from the gastrointestinal tract has some relation to the hydrochloric acid content of the gastric secretions. It is known that the actual availability of food iron may be greatly reduced by chronic digestive disorders, especially achlorhydria. Although the organic acids provided by fermentation will replace to some extent the action of hydrochloric acid in rendering food iron absorbable, their action is much less efficient. Consequently the absence of hydrochloric acid will have the effect of converting a high iron diet to one low in iron, and will thereby increase the deficiency.

There are other etiological factors concerned with the development of the iron deficiency anemias in addition to those which have been discussed, but our knowledge concerning them is vague. Probably the most important one of this group is chronic infection. While it is known that this will increase the degree of anemia, there is no generally recognized conception regarding its mode of operation. It may be due to the action of toxins which diminish the rate of red blood cell development and hemoglobin formation in the bone marrow; iron excretion may be increased from an accelerated breakdown of body cells; and finally, the intake of iron may be reduced due to a diminished amount of food ingested.

As a final statement concerning these common anemias, it should be emphasized that in any given case, the cause is usually the summation effect of multiple etiologic factors. It is probable that chronic hemorrhage is the only one which can be solely responsible for such a condition. The others rarely, if ever, by themselves produce an important anemia.

ANEMIAS OF PREGNANCY

The importance of the anemias of pregnancy has not been appreciated until recent years. It is now known that their prevalence is very much greater than previous studies indicated, and that a large proportion of them can be satisfactorily controlled by relatively simple therapeutic measures. It is amazing how frequently women are permitted to suffer unnecessarily throughout pregnancy and for some time after delivery, when in most instances this could be completely averted. Furthermore, the proper treatment eliminates the persistent tendency of infants born of mothers who have an iron deficiency anemia to develop the same condition during the first year of life.

Our studies at the Simpson Memorial Institute [4] show that about 54 per cent of all supposedly healthy pregnant women who come to the obstetrical outpatient department of the University Hospital have a pathological anemia. Additional observations over a period of about 2 years in Hillsdale and Allegan Counties in Michigan show that in such areas, which are essentially rural in character, anemia is present in about 30 per cent of all cases. If there are 2,500,000 pregnant women in the United States at any given time, and 30 per cent of them have an anemia, it would mean that 750,000 women are suffering from an easily controlled condition which, if untreated, is a hazard to both mother and child. If these calculations are applied to the world at large, the enormity of the situation is obvious. The public health implications are very clear, and there is no

reason why there should be a continuous disregard for the established facts.

A true anemia of pregnancy is one due primarily to the gravid state, in which there is a decrease in the hemoglobin and red blood cell count or both *below the diminished levels* which are almost universally observed in pregnant women and are properly regarded as normal for the period of gestation. They should also be differentiated from other recognized clinical entities which occur during pregnancy as the result of purely fortuitous circumstances.

Any discussion of this topic is incomplete without a consideration of the normal or physiologic anemia of pregnancy. Failure to recognize the effect of this state has been the stumbling block of many studies concerned with the incidence of these anemias. It has long been known that there is a progressive decline in the numbers of circulating erythrocytes and the hemoglobin during all pregnancies, which begins early in that state and continues to a maximum at about the 6th month. Thenceforth no significant change occurs until about 2 weeks following parturition, at which time the blood returns to normal. This condition is not a true anemia because there is no actual decrease in the total number of red blood cells or the hemoglobin content of the body. It is an apparent anemia dependent upon a simple dilution effect which is due to an increase in the plasma content of the circulating blood.

Several years ago, as the first step in determining the true incidence of anemia in pregnancy, studies were made at the Simpson Memorial Institute [4, 5] to provide specific criteria which permit precise delineation of this physiologic anemia from the pathologic varieties occurring in the gravid state. Briefly, it was determined that a red blood cell count of less than 3,500,000 per cu. mm. or a hemoglobin content below 10 gm. per 100 cc. of blood (64 per cent of a normal assumed to be 15.6 gm.) constituted definite evidence of a pathological anemia of pregnancy. These criteria were based upon innumerable observations of the blood of normal women of the childbearing age, blood studies in many normal women during and following pregnancy, and certain clinical and experimental observations on the effect of the dilution on the hemoglobin and erythrocyte concentration.

In recent years it has been shown that the true anemias of pregnancy can be classified with two main types. (1) the more commonly occurring hypochromic microcytic type, due to a deficiency of iron which has been previously mentioned, and (2) a macrocytic hyperchromic variety of more obscure etiology but one which has been subjected to recent revealing investigations. The incidence of the two groups is indicated by a study [4] made on the patients of the outpatient maternity service of the University Hospital. It was found that approximately 54 per cent had a pathologic anemia during some stage of pregnancy. Twenty-seven per cent were classified as the iron deficiency type, 15 per cent as the macrocytic type, and in 12 per cent it was considered that both etiological factors were active.

IRON DEFICIENCY ANEMIA OF PREGNANCY

The factors leading to a deficiency of iron in the body and the resulting anemia have been discussed previously. There remain only two aspects of the topic for further consideration. The first point to be emphasized is that while pregnancy increases the demand for iron, there is also some conservation of the metal as a result of the absence of menstrual periods during the gravid

state. Although there has been some difference of opinion in regard to this question, the following statement is a fair presentation of the situation. Granting that the iron requirements of normal pregnancy, considering also the bleeding at the time of delivery, is not especially great, it does exceed by two or three times the loss by normal menstruation over a corresponding interval, and so in conjunction with a diet low in iron, a deficiency may be produced. This is particularly true if the pregnancies are repeated frequently.

The second point to be considered is that the normally present physiological anemia of pregnancy greatly intensifies any anemia which may exist as the result of other causes. For example, it is generally agreed that a maximum blood dilution occurs, as a result of hydremia, of about 26 per cent. If the hemoglobin were 70 per cent before pregnancy, this factor alone would reduce it to approximately 58 per cent. The most acceptable view at present is, therefore, that some anemia has existed in many cases prior to pregnancy, and becomes intensified as a result of the physiological hydremia.

Regardless of how this anemia is produced, there certainly exists no difference of opinion concerning the uniformly satisfactory results of treatment with iron. The administration of 0.3 gm. of ferrous sulfate three times daily in almost all instances will promptly restore the circulating blood to normal and give assurance that the infant will not develop an iron deficiency anemia as a result of inadequate reserve of the metal at birth.

MACROCYTIC ANEMIA OF PREGNANCY

A macrocytic anemia of pregnancy is one which is characterized by the presence of red blood cells which have an average volume greater than normal and usually a high color index. In some respects the blood picture resembles that of true pernicious anemia. It does not occur as commonly as the hypochromic microcytic or iron deficiency anemia of pregnancy. For example, in a group of 148 supposedly healthy pregnant women it was observed in approximately 15 per cent.

This condition in severe form was known for many years as the pernicious anemia of pregnancy although it was recognized that there were important differences between the two diseases. In the anemia associated with pregnancy, involvement of the spinal cord, common in true pernicious anemia, is absent; free hydrochloric acid may or may not be present in the gastric secretions; and the characteristic leukopenia of pernicious anemia is not always present. Furthermore, following recovery, the patients frequently remain in good health despite subsequent pregnancies. Until recent years our knowledge concerning its cause was vague and speculative. It was attributed by various observers to infection, "toxic" influences, and some type of unclassified disturbance of the endocrine glands. Scant evidence was available to support any one of these etiological possibilities. Careful correlation of the incidence of this variety of anemia with a scrutiny of the patient's food intake has shown [5] that a deficiency of protein is the most commonly occurring dietary defect which suggests that this may be responsible for the anemia.

Additional evidence in support of this view is found in the production of a similar anemia in pregnant rats by a reduction of protein intake, and the prevention or correction of it by the addition of an adequate amount to the diet. Furthermore, it is possible to prevent the condition in humans by providing a diet containing a minimum of 80 gm. of protein of which 50 gm. are supplied by meat, eggs, milk and milk products. For the correction of such an

anemia, larger quantities of animal protein, amounting to 1.5 gm. per kg. of body weight, may be necessary.

An understanding of the etiological relationship between a low protein diet and the macrocytic anemia of pregnancy requires additional investigation for clarification, although the available evidence is highly significant. It has been suggested that a low intake acts on the rate of red blood cell production by producing a widespread change in the liver, thereby hindering an adequate storage of the material responsible for the normal rate of maturation in the bone marrow. This is supported by the knowledge that liver extract evokes a favorable response in such anemias. Another possibility is that a low protein intake is indicative of an inadequate amount of the extrinsic factor of Castle in the diet. This also would lead to a diminished amount of the maturation controlling factor. In accordance with this, is the observation that the administration of large amounts of yeast, which is rich in protein, exerts a favorable influence in some cases.

It is known that in uncomplicated cases of iron deficiency anemia of pregnancy, an increase in the protein intake of the diet is without benefit; likewise the administration of iron is without effect in patients with a hyperchromic macrocytic anemia. It should be emphasized, however, that a "mixed anemia" of dual etiology is not rare, as it was observed in 12 per cent of our cases. In such instances, a hypochromic macrocytic anemia is present and optimum results are obtainable only when both iron and an adequate protein intake are provided.

Granting that our knowledge in respect to the macrocytic and microcytic anemias of pregnancy is incomplete, recent studies have supplied information of an extraordinary practical value. It has been demonstrated that both types are more prevalent than previously supposed, especially in mild forms; and of prime importance from the standpoint of public health is the knowledge that they can be prevented by the administration of small amounts of iron, and attention to an adequate protein intake. Their prevalence, the absence of unfavorable effects from treatment, and the effectiveness of the therapy from a prophylactic as well as a curative standpoint, suggest strongly that these measures should be employed routinely in all cases of pregnancy.

MACROCYTIC ANEMIAS

In recent years a great deal of interest has been centered about the group of macrocytic anemias, in addition to the variety observed during pregnancy which have similar morphological changes in the circulating blood, and, in some instances, a closely related etiology. The characteristic blood changes are an increase in the number of red blood cells having a diameter greater than normal, and an average cell volume which exceeds that present in health. It is from these variations that the name "macrocytic anemia" is derived. They are generally considered to arise from decreased blood formation. Of utmost practical importance is the knowledge that some of them respond dramatically to antipernicious anemia therapy. Among this group are included true Addisonian pernicious anemia, the anemias associated with various gastrointestinal disturbances including liver injury, and certain ones attributed to dietary deficiencies.

To understand the etiology of these anemias, it is necessary to present the current views concerning the normal control of red blood cell production in the body, for it is a disturbance in this mechanism which is responsible for at least some anemias of this type. In health, the various steps are as follows: An unidentified but essential substance

(the extrinsic factor) in the diet, interacts with an enzyme-like component (the intrinsic factor) of the gastric juice which is secreted by certain of the gastric glands. According to Meulengracht[6] these are situated in the pylorus, the duodenum, and to a lesser extent in the cardiac region of the stomach. As a result of this interplay, which probably occurs chiefly in the small intestine, a principle is elaborated (the erythrocyte maturing factor) whose specific function is to control the rate of development of the red blood cells in the bone marrow. This factor is absorbed from the small intestine, and is deposited principally in the liver. It is released from it to the bone marrow as required to maintain the normal rate of production of the erythrocytes. The present conclusions concerning the etiology of these conditions, is that they are due to an interruption of one or more steps in this process which normally controls the continuous and orderly development of the erythrocytes.

ETIOLOGY OF PERNICIOUS ANEMIA

The recent productive investigations of the etiological factors producing the syndrome of pernicious anemia was largely responsible for our present concept of the causes of the macrocytic anemias. The etiology of this disease remained shrouded in mystery for approximately three quarters of a century after it was originally described by Thomas Addison in 1849. The discovery of Minot and Murphy[7] in 1926 that liver possessed the singular property of controlling an otherwise uniformly fatal disease, followed soon thereafter by the experimental studies of William B. Castle and his collaborators[8] bearing on its cause, comprise one of the most brilliant chapters in the history of hematology. These contributions laid the foundation for an understanding of the etiology and treatment of pernicious anemia and the allied macrocytic anemias.

The most acceptable view of the cause of the anemia of pernicious anemia is that it arises from a decreased rate of production of red blood cells as a consequence of a diminished amount of the erythrocyte maturing factor. All evidence demonstrates, as Castle has shown,[8] that this arises from an inability of the gastric glands to secrete an adequate amount of the intrinsic factor. Consequently, with a defect in one of the essential steps, the erythrocyte maturing factor which is the end product of this process, becomes deficient and a retardation of maturation of the red blood cells in the bone marrow results. Since the red blood cells do not mature at a normal rate, they are delivered to the circulating blood in diminished numbers. When this circumstance prevails, an anemia will invariably result as blood destruction undoubtedly continues at a normal or possibly an accelerated pace.

Although this theory has received wide acceptance, the reason for the decreased functional activity of the gastric glands which are the source of the intrinsic factor is not known. As Meulengracht[9] has emphasized, however, there is clinical evidence which strongly suggests that there is a hereditary defect in the glands of the stomach and duodenum.

LESIONS IN THE NERVOUS SYSTEM IN PERNICIOUS ANEMIA

Pernicious anemia is characterized not only by alterations in the blood but also in a great majority of cases by a degenerative process in the nervous system. This change is refractory to treatment, or at least is much less responsive than the anemia, and at present constitutes the major therapeutic problem of the disease. The process characteristically involves the peripheral nerves and the posterior and lateral

columns of the spinal cord. The former causes paresthesia of the hands and feet, and the latter, when advanced, produces the clinical syndrome of a spastic, ataxic paraplegia. The cause of the nervous system involvement is as obscure as the etiology of the anemia has been, and at present is less understood. Recently Henry Field, Jr.,[10] has made the suggestion that this might be the result of a vitamin B_1 deficiency. The basis for this explanation lies in the observation of Castle, *et al.*[11] that a diet deficient in vitamin B_1 will produce alterations in the spinal cord of dogs which are similar to those observed in pernicious anemia. Although the diet ingested by patients with this disease is usually not grossly deficient in this substance, there is evidence, according to Field, that the achlorhydria which is uniformly present in patients with the syndrome, impairs the absorption of this material. It is thus conceivable that the suboptimal absorption of some component of this vitamin complex over a period of years, due both to the achlorhydria and a low dietary intake, may be responsible for the neurological changes. This tentative view is now being subjected to a careful experimental study at the Simpson Memorial Institute.

OTHER MACROCYTIC ANEMIAS

In addition to pernicious anemia, it is believed that similar anemias may result from a disturbance in the process leading to the elaboration of the erythrocyte maturing factor. It is possible that an inadequate amount of the extrinsic factor in the diet may be responsible for this, in the so-called "tropical anemia," in the macrocytic anemia of pregnancy, and also to a certain extent in some cases of pernicious anemia.

Complete gastrectomy and extensive infiltrating destructive lesions of the stomach are also recognized as causes of such an anemia. The obvious implication is that the source of the intrinsic factor is destroyed. Furthermore, it has been known for many years that various intestinal lesions may be associated with a macrocytic anemia. In short-circuiting operations of the intestines, the generally accepted theory at present is that there is a faulty absorption of the erythrocyte maturing factor. In intestinal strictures the explanation is less apparent, but it has been assumed that such a lesion likewise interferes with the normal rate of absorption of this substance. In more recent years it has been stated[12] that extensive damage to the liver, when present over a sufficient period of time, will cause such an anemia. The explanation advanced is that there is an interference with the normal storage of the erythrocyte maturing factor in this organ. Even more recently it has been suggested[13] that a macrocytic anemia may arise due to the inability of the bone marrow to utilize the normally produced erythrocyte maturing factor (achrestic anemia). That such a cause might produce an anemia cannot be denied, but its final acceptance must be held in abeyance pending additional studies.

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Engineering Services in Industry Other than Control of Occupational Diseases*

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ENGINEERING services for the protection of life and health in industries have been extensively used in the promotion of safety, and today the place of the safety engineer is recognized because the results of his work have proved valuable. Engineering services are given to the plant physician for the purpose of aiding him in the prevention and removal of toxic substances which would otherwise cause poisoning of workmen, or for occupational disease. Besides these two well defined fields of engineering activity, there are others in which the engineer can be useful.

For the purposes of workmen's compensation, a rather sharp differentiation is made between industrial health hazards due to conditions affecting workmen immediately engaged in specific processes and those affecting fellow workmen in industry, the neighbors of industry, and frequently the customers of industry. Neighbors are most often affected by nuisances from odors, gases, dust, and trade wastes, which may constitute health hazards as well as nuisances.

Such matters related to the health of industrial employees as illumination, glare, noise, vibration, safety of water supply, the temperature, humidity and movement of air, smoke, housing, recreational facilities, and city planning are largely engineering in nature. Close coöperation between medical and engineering personnel is very important in determining what conditions are or may become deleterious to health, without necessarily causing specific occupational diseases, and then, too, in carrying out appropriate measures to correct those conditions.

Much that is now more or less taken for granted was not always so. Early in the industrial revolution that initiated the factory system in place of the small shops and home crafts, abuses occurred both with respect to conditions of work and long hours of employment for men, women, and children. Before the passage of restrictive legislation, it was not uncommon to find that workers were required to oil moving machinery and operate it while eating their meals. Child operators, bound over as apprentices, were frequently housed in factory attics, one 12 hour shift going to beds still warm from their use by another shift. Respiratory illnesses were common under such adverse living conditions. Fatigue wore out workers early in life, with attendant unemployment at a period of life when they should

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have been most useful to themselves, their families, and society. Great as has been the improvement since then as the result of a more humane attitude, sanitary and labor legislation, and intelligent self interest of industrialists, there remains much to be done which involves the application of engineering methods and materials.

ILLUMINATION

Adequate light has two principal advantages: (1) More and better work can be accomplished with less fatigue and less danger to vision. (2) Dirt and obstacles over which one may trip become more noticeable and therefore more likely to be removed.

The intensity of light should be adapted to the character of the work being performed; the finer the work, the higher the degree of illumination needed. High intensity given by local sources of light at the spots where fine work is being done may well be coupled with a lower level of general illumination throughout the work space. The latter level should be high enough to reveal hazards such as dark colored objects on the floor, so that a worker turning quickly from the high intensity at his machine or bench will not have difficulty in seeing them and thereby avoiding falls.

Factors such as rates of dark adaptation of the eyes of workers and the relationship of vitamin A deficiencies thereto enter into this question of illumination and emphasize the need for coöperation between the engineer and the industrial physician.

Use of light poor in red rays, such as that of mercury vapor lamps, may have an undesirable psychological effect upon workers, particularly women, because of the unnatural appearance of persons seen in such light. Mixture of light containing red and yellow rays with the bluish light is desirable, even though the latter gives sufficient intensity alone. Arrangements of incandescent lights and mercury vapor lights together in a work space are frequently used for this purpose.

Investigations have indicated that raising the intensity of illumination has increased the rapidity and accuracy of work by from 10 to 15 per cent, and reduced eye strain, fatigue and consequent headache, and possible serious eye defects.

There is a difference of opinion as to the intensity needed for the performance of certain kinds of work. For example, estimates for that necessary for reading vary from 10 foot candles for reading ordinary black type on good quality paper, to as much as 30 or even more for reading fine type on poor quality paper.

PREVENTION OF GLARE

Diffused lighting is desirable. Bright non-shaded sources of light are causes of glare and should be replaced by diffuse sources or surrounded with suitable shades. Glare reduces visual acuity and causes discomfort. It promotes accidents, due to the longer time necessary for dark adaptation of the eye that has been subjected to glare. The intensity of the light on the work should not exceed ten times that of the light on the surrounding objects if accidents, due to this cause, are to be prevented. The glazing of paper with which one works is an appreciable factor in glare. Prevention must take into account both the nature of the light source and the materials used by the worker.

NOISE

Noise may be considered under two main heads: (1) noise from legitimate industrial activities, and (2) disturbances of the peace by unnecessary use of automobile horns and the like.

The latter is a matter generally felt to be a responsibility of the police de-

partment. The former type of noise emanating from legitimate industry may be tolerated during the day but objected to if it continues at night, when it interferes with the sleep of neighboring residents.

Frequently noise can be prevented at the source by better design of machinery. Generally a noisy machine is an inefficient one. Noise not eliminated by improvements in machinery may be absorbed by suitable acoustic materials properly placed. Sometimes a wall or floor of a structure acts as a sounding board to amplify the noise, but effects of this kind may be minimized by use of foundations that do not transmit sound vibrations to the structure—another engineering problem.

Effects of noisy environments upon the sense of hearing, the nervous system, efficiency, and fatigue have been found by investigators amply to justify remedial measures. The recognition of this fact has resulted in recent years in a new industry, that of acoustic treatment and materials.

VIBRATION

Much complaint is made of vibration of too low frequency to cause noise. For example, a worker making lithographs or retouching photographs in a building constantly vibrating during working hours because of machinery elsewhere in the structure, is under a severe handicap. Vibrations may travel through the ground to nearby houses due to the operation of punch presses and similar heavy machinery, and are frequently the cause of complaints by neighbors of broken rest and structural damage. The correction of such conditions lies in the field of engineering, of which zoning or city planning is a part.

WATER SUPPLY

A court decision, recently reported, held that a water-borne disease contracted during the course of employment was not an industrial accident and therefore not compensable under the law of that state. There may be some question whether it constitutes an occupational disease. Many outbreaks of water-borne disease or illness have been traced to the contamination of drinking water in factories either by cross-connections of a safe with an unsafe supply or by interconnections of a safe water supply with a sewer or other container of contaminated liquids. The contaminant may be human excreta or industrial wastes of toxic character.

In new buildings, the occurrence of a hazardous situation which permits such illness to occur can in part be prevented by requiring the approval of plans for the plumbing system and industrial water piping system by a competent public health engineer, coupled with adequate inspection to assure that no deviation from the approved plans occurs. Since this step does not prevent the subsequently installation of cross-connections and interconnections, periodic reinspections should be made, as a further safeguard. Identification of piping systems by suitable colors is helpful in preventing the accidental making of cross-connections, but education and a real sense of responsibility are needed to prevent intentional creation of these hazards.

Air washers and scrubbers used in connection with spray booths frequently are found to have interconnections which, under conditions of reduced pressure in the water mains, permit toxic substances to enter the drinking water supply. Vats and tanks of chemicals may be hazards. In one instance coming to the writer's attention, a tank containing potassium cyanide solution was discovered to have a submerged water inlet through which siphonage of this deadly poison into the drinking water supply of a large building could occur. Fortunately the danger of the situation was discovered and imme-

diately remedied before anyone was poisoned. The industrial engineer who designs and operates a plant, the physician who guards the health of the employees, the fire underwriters, the water department, and the health department need to work harmoniously together if new hazards to drinking water supplies of workers are to be prevented and existing ones discovered and eliminated. The safe disposal of liquid wastes, containing pathogenic bacteria, poisonous chemicals, or toxic volatile substances is an engineering problem of great complexity.

AIR TEMPERATURE, HUMIDITY, AND MOTION

Since activity of the body entails combustion of food and the production of heat, it becomes necessary to dissipate body heat to prevent an increase in temperature. This is done in part by evaporation of water from skin and lungs, and in part by radiation, convection, and conduction, which processes are affected by the temperature of surrounding surfaces, kind and amount of clothing worn, and the temperature, humidity, and motion of the air. Less than 10 per cent of the heat is lost in other ways.

Many cities have ordinances requiring that provisions be made for ventilating factories and workshops and setting up minimum standards which must be met. Some processes entail the use of high temperatures and the expenditure of much muscular energy, as for example around blast furnaces and foundries. Workers there are frequently exposed to great extremes of heat and cold over short intervals of time. Profuse perspiration depletes not alone the water but also the stores of salt in the body, causing severe cramps of muscles of the limbs and abdominal wall (stoker's or miner's cramp) unless the intake of salt is increased to compensate. In industries where such conditions exist, salt tablets are dispensed to the men, often adjacent to drinking fountains, and education of the workers as to their need for the salt tablets is undertaken.

Heat stroke is attributed by students of the phenomenon to the exhaustion or inadequacy of the heat dissipating mechanisms as a result of exposure to a hot, humid atmosphere. It may seriously damage nervous tissues and cause death. Sunstroke is a form of heat stroke in which there is also the absorption of solar radiant energy in addition to the effect of high atmospheric temperature.

Comfort of workers has an effect upon the mental attitudes they adopt. Their mental health may be affected to some degree by the atmospheric conditions in which they labor. To promote their mental well-being, temperature of the air should be adjusted to the kind of work. Office workers seated at desks may require a considerably higher air temperature for comfort than men doing hard muscular labor.

The provision and maintenance of ventilating and air conditioning equipment is the function of the engineer, in addition to the provision of local exhaust ventilating systems for the removal of toxic materials at their point of origin. The latter is not within the realm of this discussion, however, as it deals more intimately with the prevention of occupational diseases.

It is not enough for public authorities to enact legislation requiring the building of suitable means for ventilation of places of employment. In order fully to discharge its duty, the public body should undertake to assure that the equipment is used, or at least is capable of being used. The burning out of a motor, the improper adjustment of dampers and splits in ducts, the rusting away of parts of ducts, the covering of an intake opening, and many other things occurring accidentally or

otherwise, may impair or destroy the usefulness of the system. Annual inspections should be made of all mechanical ventilating equipment which is required by law to be installed, to insure that it is possible to operate it and deliver the proper amount of air to the work spaces when it is required by the workers.

Incidentally, on the occasion of these annual inspections, the inspector has an opportunity to note conditions favoring occupational diseases and suggest means for their amelioration. Sometimes workers suffering the ill effects of such conditions either do not suspect the cause of their illness or discomfort or are afraid to complain lest they lose their jobs.

SMOKE CONTROL AND ABATEMENT

The presence of dense smoke in the atmosphere greatly diminishes the amount of ultra-violet light in sunshine reaching the ground, especially during the period when the sun does not approach close to the zenith. The beneficial effect of short wave lengths of light upon health, particularly in such conditions as rickets, is too well known to require emphasis here.

Smoke prevention is essentially an engineering problem, involving the maintenance of sufficiently high temperatures and enough oxygen to secure complete combusion. Proper design of boilers and heating plants, coupled with education of those in charge of them, has proved effective in numerous places where a serious effort has been made in this direction.

HOUSING

It is impossible to separate completely the effect upon a worker's health of the conditions away from work from those at his place of employment. He is affected by both environments. If while at work he is exposed to toxic substances, his hours away from work should be spent in an environment conducive to neutralizing such of these as have been absorbed. Those persons suffering from chronic ailments, possibly as a result of unhygienic living conditions at home or bad health habits, are known to be poor risks when toxic materials must be encountered in their work, due to (1) lowered resistance, (2) carelessness or inability to take precautions.

When a worker, fatigued after a day's work and possibly suffering from exposure to some occupational hazard during the day, reaches his home, it should be possible for him to relax. Overcrowding, with its concomitant close personal contacts, is not conducive to relaxation and recuperation in preparation for the days that lie ahead. In planning and building more hygienic housing, the engineer has his part. He may well devote careful attention to the Basic Principles of Healthful Housing prepared by the Committee on the Hygiene of Housing of this Association.

RECREATION

Mental hygienists aver that mental disease is one of the principal causes of absenteeism from industries, both in this country and abroad. Both housing and facilities for recreation have definitely recognizable influences upon mental health, and therefore should be matters of concern both to employers and employees, in addition, of course, to the engineer and industrial physician. The trend toward shorter hours of labor lends point to the need for adequate city planning to provide open spaces and equipment for health promoting recreation.

CLEANLINESS

The public health engineer must concern himself as well with such activities as are frequently placed in the category of esthetic effects—good housekeeping being an example. A plant should be designed with a view to producing

pleasant surroundings with a minimum of effort and, as a means to this end, have smooth, light colored walls, and impervious floors. Cleanliness of surroundings helps the plant physician to produce among workers in industry those habits and attitudes that will lead to care in the handling of toxic substances and dangerous equipment and promote good health.

Cleanliness applies not only to removal of visible dirt, but also the invisible microörganisms which may spread disease. Although colds are not usually considered to be occupational diseases, they rank high among causes of lost time. Therefore, steps for reducing the incidence of colds are warranted. Sterilization of dishes and eating utensils, use of approved types of drinking fountains which comply with the essential features in the design of such fountains adopted several years ago by this Association, or paper cups, and the provisions of satisfactory washrooms, locker facilities, and eating places, separate from spaces where toxic materials are present, are important aids toward better health. Lockers should be ventilated so that damp clothing placed in them may dry.

HEALTH EDUCATION

Finally, the engineer is in a favorable position to help educate the workers in the intelligent use of the safeguards that his skill provides for their protection. The attitude of disdain or indifference on the part of employees that was sometimes encountered by the safety engineer has now largely been changed to one of respect and coöperation, as the workmen have seen how accidents have been reduced. Since "the proof of the pudding is in the eating," the enhancement of health through the various means at the disposal of the engineer, working in harmonious coöperation with medical and nursing personnel of a plant, develops confidence in his knowledge. This increases his value in promoting health education among the workers, with resulting improvement in their health knowledge, health attitudes, health behavior, and health status.

Use of Existing Visiting Nurse Services for Industrial Work in Small Plants*

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TODAY medical departments in industry are increasingly becoming industrial hygiene divisions rather than first aid dispensaries. Since the aim of industrial hygiene is to promote and preserve the health of the worker, while first aid implies the immediate and restricted assistance following a catastrophe or accident, the change in breadth of service and interest is evident to even the most casual observer. The manner in which this change has come to pass is not part of our discussion. We are concerned rather with its effect on industrial health programs, and in particular on the programs in small plants.

We now know that industrial accidents and industrial diseases, whose prevention was the aim of the early plant dispensaries, are not responsible for the greatest amount of time lost by workers. In fact, ill health is the cause of at least 15 times as much absence.[1] To industry, absence from whatever cause is expensive and upsetting. To the worker, loss of time, because of an illness which could have been prevented, is especially futile. Therefore, when management and workers alike understand the value of industrial hygiene, positive support is forthcoming. A good industrial health program does pay.[2] The larger manufacturers, convinced of the soundness of such an investment, have quite generally installed industrial hygiene departments. They have developed programs which include not only accident control and prevention, but also health promotion as provided in preëmployment physical examination, correction of defects, provision for hygienic as well as safe working conditions, and health education for all workers. The results in the reduction of lost time due to illnesses and accidents have been revealing and satisfactory. The worker likewise has felt the benefit of this broader approach to industrial hygiene as he realized earlier the benefits of legal provision for compensation for industrial accident and disease.

There is, however, work to be done in applying this type of activity to the small plant. Since 62 per cent of the 8,000,000 and more persons employed in manufacturing plants in this country are in plants with less than 500 employees,[3] it is worth while to consider some of the problems which confront the small manufacturer who wishes to develop a health service. He does not need to employ a full-time physician

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and nurse. He can develop his safety committee and his plant first aid staff, but in the matter of professional help he may have difficulty. The American Medical Association, through its Council on Industrial Health, is working on this problem, and the National Association of Manufacturers, through its Committee on Healthful Working Conditions, is endeavoring to give practical assistance to small plants in establishing departments.[4] Various arrangements for nursing service have been tried and have met with success in different places.

The experiment with which I have had experience involves the use of staff nurses from a Visiting Nurse Association on an appointment basis in plant dispensaries. Visiting Nurse Associations were organized primarily to give part-time service, originally, it is true, in homes, but more recently they have been found in schools, clinics, and industries. While many people still think of visiting nurses as available for one section of society only, they are increasingly sought by persons quite able to pay regular fees but needing only part-time care. Therefore, the plant which needs and wishes to pay for part-time nursing service may properly turn to its local public health nursing organization. These organizations are established upon certain fundamental principles. The nurse meets a standard in her professional preparation; she works under the supervision of a qualified person; she gives care to patients always under the medical direction of a physician; she uses the existing community resources for her patient wherever possible; and she is as much concerned in having her patient learn to prevent illness as she is in helping him recover from the present difficulty. All of these things are essential in a good industrial program.

So much, then, for her readiness for this piece of work. You are probably interested in knowing what she is called upon to do in a plant and how she does it. The National Organization for Public Health Nursing reports that out of 210 nonofficial agencies who returned reviews of their 1939 activities, 27 are engaged in some form of industrial work. In this group a variety of participation is evident. While approximately half give plant service, and three-fourths visit in employees' homes, only one-fourth do both. The income to the agency, the basis for setting the charge, and the yearly volume of service vary widely. Apparently we are all experimenting here as we are in programs within the plant.[5]

The Visiting Nurse Society of Philadelphia has had but 8 years of experience in this field. The 5 industries we serve have had dispensaries (in most cases) for 14 years. Prior to our participation 4 of them were served on the unit, or team system by one physician and by a nurse who divided her time among several small plants conveniently located. We, therefore, had the advantage of a group of people accustomed to a part-time industrial hygiene program.

It was further our good fortune to undertake the work under the medical direction of an industrial physician. His readiness to develop the medical departments in 4 of his plants with visiting nurse service, and his experience in the problems of industrial hygiene have contributed in no small measure to our progress in this field. More recently a 5th plant, with another physician, has been added to our group. Under no circumstances could the programs discussed here be carried on without a medical director.

Obviously the plant wishes the nurse available when the employees are there. On the other hand, they cannot be interrupted at certain crucial moments in their work in order to go to the dispensary. The other side of the pic-

ture is the problem of the visiting nurse whose day can be more efficiently used if it is not broken into by frequent short appointments. We have gradually worked out a system which seems to give satisfaction. The nurse is usually in the plant at the beginning or the end of the morning or afternoon. She tries to space her time to supplement that of the physician so that one of them is in each plant daily. Wherever possible she gives consecutive time rather than two appointments a day to a plant. The time at which the nurse is in the plant is almost as important as the total number of hours she gives.

The Society made its business arrangements directly with the plant management, offering nursing service by appointment at an hourly rate. Earlier experimenters took the position that a plant needed 2 hours weekly of nursing time per 100 employees. We soon learned that the type of plant activity and personnel affected this estimate greatly. An office population may be adequately served on this basis, but a packing plant with the possibility of more frequent minor injuries and resultant surgical dressings may need twice as much time. The plants very properly wanted to have their own nurse, not a succession of different people. This was assured them, and has been consistently followed, with gratifying results. The nurse is a regular member of the plant personnel during her time there and uses the Visiting Nurse Society as a separate community resource for her plant patients when necessary. However, in order to insure continuous service to the plant, each nurse has a substitute or understudy who is familiar with the plant program and is available to relieve the regular nurse for absence or illness. This we believe to be essential for a reliable service to industry.

The hourly charge is based on the nurse's salary, vacation relief, supervision, and transportation. Our agreement with each plant specifies the amount and kind of nursing service to be rendered, and the hourly cost. All bills are submitted monthly. Changes in time arrangements are made after consultation between the physician, the plant, and the Visiting Nurse Society, and are, of course, based on demonstrated need.

The program under the direction of the physicians in our plants has expanded encouragingly. Preëmployment physical examinations, annual or biennial examinations, follow-up for corrections, safety promotion, plant hygiene, and general health education form the basis of our work in each plant. The variations are due to type and size of industry, age and sex of workers, and adequacy of medical and nursing time available.

In 2 plants preëmployment physical examinations are made, one of which includes a routine Wassermann test. In the other 3 plants physical examinations take place as soon as possible following appointment. It is the aim of the physician to give each worker an annual health examination. Time has permitted this in but one of the 5 plants. The nurse is responsible for assisting the workers to carry out recommendations made at these examinations. This frequently involves conferences with private physicians or outside agencies, and here the familiarity of the public health nurse with her community resources proves to be a decided asset. It is not unusual to find the financial obstacle the chief one to the correction of defects, and several of the plants have established loan funds which are made available so that corrective dental work or glasses can be procured promptly. Return payments are then made weekly by the employee.

A further responsibility of the nurse is that of being familiar with the plant and the workers as they carry out their

several processes. We have found it valuable to take time to visit the departments with some regularity, and to be familiar with the general tempo of the work in the sections of the plant. The relationship of illness to activity has several times been rather clearly shown when monthly reports have been studied with the set-up of the department in mind. In one plant a group of young women in a packing department showed an unusually high incidence of gastro-intestinal difficulties. Study of their work, their lunch period, and their choice of foods at the plant cafeteria resulted in consultation with our nutrition worker and the plant manager. Following this, some menu changes as well as relief periods have been developed, and we are noticing a gratifying diminution of the symptoms. At the same time the nutrition consultant and the nurse have arranged for brief conferences with the girls in this department on food selection and normal diet.

The frequent appearance of the nurse in the plant does give the workers a sense of her familiarity with their problems, and also perhaps furthers their readiness to talk with her. Recently an older employee stopped the nurse as she made her way through his department and talked to her about a problem which had been concerning him for some time. He feared dismissal because he was reaching what he anticipated might be an age limit. The suggestion of the nurse that he ask for complete physical examination, his confidence in the doctor which enabled him to accept the suggestion, and the report of his general good health to the manager, resulted in a distinct relief of his anxiety. The worker and the manager talked over the whole situation with the result that he was assured of employment, a yearly physical examination, and the prospect of some change in his load when that was indicated. His anxiety had apparently arisen within himself since the manager had no question of his ability and of his value to the plant.

In the small industries in which we give service the safety programs have been rather informally organized. At present the physician and the nurse do not sit regularly on safety committees, but this is a procedure which we all recognize as desirable, and we are working toward it. Here again, the nurse who is familiar with the safety devices provided and their manner of use can often throw her influence on the side of their adoption by the workers. In one plant which has a rather high accident rate we have found the influence of the nurse to be effective with some workers who were inclined "not to bother" to wear knife guards in a cutting process. The return of an individual to the dispensary with repeated lacerations gave the nurse an opportunity to do some much needed education on the importance of coöperating with the safety plan of the plant.

Perhaps one of the most obvious values of the use of a public health nursing staff in a small plant is her familiarity with the community. A report made before the Association a year ago of the work of industrial nurses in a large city in Pennsylvania, pointed out that the industrial nurse often works quite alone without the benefit of close relationship to community agencies. This may be due to lack of information rather than to failure of interest on her part. From the moment that she enters a Visiting Nurse Association, the public health nurse thinks in terms of community resources for assisting in the solution of her families' problems. Therefore she is in a position to be of practical assistance about medical or nursing attention at home, convalescent care, hospital care, temporary child placement, or recreational opportunities. Our plants all have close working relationships with a neighborhood hospital

for emergency treatment, and with the health department for laboratory work.

Recently a young woman in one of our plants discussed her approaching marriage with the plant nurse. Her discussion lead to the nurse's suggestion, with the physician's approval, that she and her prospective husband might like to consult the Marriage Counsel for help with their plans. They did this and reported back to the plant dispensary their satisfaction with the assistance they had received from the Counsel.

The middle aged woman in one plant, who went to a seaside convalescent home for her first holiday in many years, following the death of her mother, is another illustration of the recognition on the part of the industrial hygiene department of the value of "preventive sick leave." In this instance the worker's colleagues were particularly interested in her welfare, and it was they who brought to the attention of the dispensary staff the difficult time which the individual was having. The arrangements for the unexpected holiday, and help in the selection of the place to which she might go, were made through the dispensary staff.

One ever present problem in a part-time service for a plant is that of coverage in the absence of the doctor and nurse. In the plants in which we are active different systems have been developed. Certain non-hazardous industries find scant need of any dispensary service except at the stated intervals provided. However, in 3 plants, 2 of which are on a 16 hour schedule, there is need of someone prepared at least to give first aid. First aid boxes, which are the responsibility of the nurse, are available in each department, and each plant has one person available for accidents, who has been instructed by the physician and the nurse. Very careful instructions as to the procedure in the event of serious accident are posted in all plant dispensaries. The relief or first aid individual usually has a post of duty near the dispensary, and is on duty when the dispensary staff is away. There is distinct need, we feel, for more adequate provision for this kind of service by management. Wherever such a person is used, he or she must be carefully prepared for the work.

This presentation of the type of activity in a small industrial dispensary, in which I have described the nurse's work, will give you some appreciation of the importance of the qualifications of the nurse.[6] The Visiting Nurse Society realized in the beginning that the nurse who undertook industrial nursing needed to be a mature and experienced person, with a successful record in human relationship. Whenever the selection of a new nurse comes up, and plans are being discussed with the plant physician, his inevitable comment is, "Well, you see, we need a particular kind of person for industry." The definition of "particular kind" is a bit obscure, but I presume it is much the same as that we imply when we say of an individual, "She is a really good public health nurse." We accept the validity of the statement of the industrial physician. The successful nurse regards her relationship to her responsibilities in the plant as she does her work in her district and with her families. She endeavors to understand the needs of the individual workers so that she may be practical in her counsel and help them to meet their problems.

The qualifications are those for staff appointment in the Society, plus the previously indicated successful experience on the staff. The new nurse then spends several weeks in the plant, if possible, with her predecessor, and always under the direction of the member of our supervisory group who heads the industrial program. If she is used only for relief of the regular nurse, she has a similar introduction, and visits the plant regularly in order to be known

there and to be familiar with daily activities. This is vital to successful relief.

Very early in our participation in this work we felt the need of a supervisor in our own group who would act as a liaison person between the Society, the plant physicians, and the plants themselves. We therefore chose a member of our supervisory group who carries this work. It consumes approximately one-third of her time. She is responsible for the daily progress of the work in all the plants. In addition to assisting in the selection of plant nurses and carrying out their introductory programs, she is also responsible for their continuous staff education. We hold monthly conferences with the plant physician, the industrial nurses and their general supervisors at the Society's office. Much of the work of standardizing dispensary procedure, the establishment of standing orders, plant policies, and the development of new programs has been begun and thought through in these conferences.

Formal preparation for nurses in industry is recognized as essential in our graduate programs in public health nursing today. We are fully aware of the vital need for preparation and are working toward it with our own group through the Department of Nursing Education at the University of Pennsylvania. Meanwhile, we have found it helpful to use every available opportunity for attendance at conferences and meetings of such organizations as this and the National Safety Council. Likewise, members of our group have studied industrial programs in our own community and in other cities. Each contact has strengthened our own work.

The problems which have confronted our agency in this work are typical. Probably the outstanding one has been the provision of an adequate amount of nursing time to insure an all-round health program. The concept of the program held by the physician and management influences this. The industry which conceives of its plant dispensary as entirely a first aid station needs a larger concept of the possibilities of this department before it is willing to purchase additional time. No stock rule seems to us sound. The plant with few hazards can have a successful program at smaller cost per employee than its neighbor. Likewise, the type of employee influences the amount of time needed. A long list of factors which affect this matter can be given. It seems sensible to begin with a reasonable amount of time, which could be estimated at 2 to 4 hours of nursing time per week per 100 employees. Experience will teach the department how much time it needs to achieve its goal and, if management has not crystallized its idea of maximum time in the experiment, future enlargements or curtailments can be made. However, changes in procedure of this kind are not made readily in any busy organization, and therefore should not be contemplated on too brief an experience.

The primary objective of any manufacturing plant is the production of goods and their sale. The health of the workers, while of fundamental importance, cannot daily take first place in plant activities. The industrial physician and nurse need to develop effective ways in which to keep management in touch with and aware of their work and the productive results. The regular statistical report can be constructed so that it points up both progress and problems. Conferences, though they cannot be frequent, are often the best way in which to bring to the attention of the employer the problems which are confronting the dispensary. It has been our experience that, whenever a really important matter concerned us in the plant, our access to management was immediate and action was forth-

coming. We have learned, however, to tell our story in a different way to the business man from that told to the board member. It has been good experience for us.

No piece of work is safely done without an adequate record. Therefore, an individual record of each employee is fundamental. Also, a record of progress in the follow-up of physical examinations is essential. One of our problems has been to have time for this record work. The statistical office of the Society takes full responsibility for the analysis of monthly statistics, but the detail of record work in the plants themselves is borne by the nurse. In one plant we have been able to secure clerical assistance, which has relieved the nurse for her own professional function.

The work of the Society in this field has been confined largely to the mastery of a sound industrial nursing service on a part-time basis. We are now convinced that a visiting nurse association can offer a plant a satisfactory service. It would seem to us that the next step lies in the field of promotion. We know that local county medical associations are developing industrial hygiene committees which undertake to prepare physicians for industrial work as the demand arises. It is our feeling that local chambers of commerce, divisions of industrial hygiene in departments of health, and safety councils, may also be resources in this realm.

The public health nurse has been welcomed to an intimate place in the structure of our national health program because of her readiness to give skilled assistance and her ability to adapt herself to changing conditions. Repeatedly health problems have been solved when those responsible have introduced her into the situation. The experience of one agency presented here is too restricted to justify broad assumptions, but it has been developed upon the principles of public health nursing in kindred fields, and the results thus far are encouraging. Since the healthy worker is a tangible asset to industry as well as to society, and the industrial hygiene department is a factor in maintaining that health, it is reasonable to assume that all workers should have the benefit of such service. However, as so great a proportion of the workers engaged in manufacturing processes are in small plants, programs must be devised for them, offering part-time medical and nursing service. These industries are scattered throughout our country, as are also public health nursing associations created for visiting or part-time nursing and health services. Therefore, it should be practically possible to repeat our experience under a variety of circumstances, and we anticipate that further experimentation between plant medical departments and visiting nurse associations will be forthcoming.

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Bacteriological Diagnosis of Pneumonia in Relation to Chemotherapy*

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THE introduction of various sulfonamide compounds has contributed greatly to the therapy of pneumonia. Important as this contribution is, it leaves unanswered the fundamental question—that of prevention. The development of therapeutic measures serves to emphasize the fact that the prophylaxis of pneumonia still remains an unsolved problem.

Cole has pointed out that lobar pneumonia is not a single disease but rather a group of diseases, each with a specific etiology. This point of view is as valid from the public health aspect as from that of therapy. It is well to remember that our ideas of the epidemiology and pathogenesis of pneumonia are far from complete and will remain so until further careful study and evaluation have been made of the various factors involved. The type incidence of pneumonia is as baffling a problem as ever; for example, why do infections due to Type I comprise approximately 30 per cent of all cases of pneumococcal pneumonia, or why are 80 per cent of all cases due to but 7 of the many specific types of pneumococci?[1] Knowledge of the factors which account for the selective incidence of these particular types will undoubtedly throw great light on the prophylaxis of this group of diseases. Until fuller knowledge of these factors has been gained it is necessary to study the problem from the standpoint of the type-specificity of the bacterial incitant.

The fact that pneumococci are usually secondary invaders in the wake of a non-bacterial upper respiratory infection such as the common cold, in no way detracts from the significance of the observation that Type I pneumococcus is the most important epidemic strain. It is equally significant that the epidemic strains are encountered infrequently in the normal throat except in individuals who have been in intimate contact with patients suffering from pneumonia due to one of these types. Furthermore, although the control of pneumonia may ultimately be achieved through prevention of the antecedent upper respiratory infection, this is as yet not possible. Meanwhile all precautions should be taken to prevent the spread of the epidemic strains of pneumococci. How this may be accomplished is far from clear, but intensive epidemiological studies offer an approach to the problem.

In addition to these general considerations, the bacteriological diagnosis of

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pneumonia has immediate practical importance from the point of view of therapy.

Upon the introduction of any new therapeutic agent there is a tendency to discard previous procedures or else minimize their importance. With the advent of sulfapyridine, the first effective antipneumococcal drug, it was considered by many that the use of specific antisera was outmoded, and that the much less exacting procedure of administering a sulfonamide drug by mouth to all cases of pneumonia, irrespective of the specific nature of the etiological agent, solved the problem of therapy. This point of view was based on inadequate clinical and experimental evidence, so that now opinion is gradually shifting back to a middle ground where the use of serum and the sulfonamide drugs may be more properly evaluated.

It is the opinion of most investigators that the therapeutic action of the sulfonamide drugs can be explained by their bacteriostatic properties. Fundamental as is this mechanism, it should be remembered that the disposal of the still living and virulent pneumococci is a function which can be performed only if the various defense mechanisms of the host are active. This point may be illustrated by reference to the chemotherapy of experimental pneumococcal infections with sulfapyridine.[2] If mice are infected with Type I pneumococcus and treated with sulfapyridine for 3 days, practically all of the animals survive. If treatment is carried out for 2 days, only 60 per cent of the animals survive, and if for only 1 day practically all of the mice die. It has been shown that approximately 3 days are necessary for the development of active immunity to pneumococcus Type I. Hence, in infected mice which are treated with the drug for only 1 or 2 days it is probable that the deaths which occur are attributable to the fact that the drug has been discontinued before the animals have had sufficient time to develop specific immunity.

If for any reason the body is not able to develop antibodies rapidly enough to sensitize the invading bacteria, then even prolonged administration of the drug may not be effective in inducing recovery. This is illustrated in the case of experimental infections with pneumococcus Type III. Very few mice infected with this organism survive even though treated with sulfapyridine for a prolonged period, and it has been shown that it is difficult to induce active immunity in mice to pneumococcus Type III, whereas this is readily accomplished in the case of Type I.[2]

It appears likely that the differences in the antigenicity of pneumococcus Type I and Type III may explain the difference in the response to sulfapyridine in experimental infections with these two types. The differences in the antigenic behavior of pneumococcus Type I and Type III in mice are observed in human beings as well.[3] Due to this fact, as well as to the serious prognosis in Type III pneumonia, it is our practice to treat these patients with a combination of an appropriate sulfonamide compound and Type III antipneumococcus serum. A survey of the literature indicates that the case mortality rate in patients with Type III pneumonia, treated with sulfapyridine alone, is in the neghborhood of 17 per cent, whereas in a small series of patients which we have treated with a combination of serum and drug, the mortality rate has been only 4.3 per cent. From clinical experience as well as from experimental considerations we feel that the combined therapy with drug and serum offers much more promise than either agent alone in the treatment of Type III pneumonia.

The necessity for making a bacteriological diagnosis applies also to infections due to pneumococci other than

Type III, since here also the indications for the use of specific antisera are well defined. In addition to the sulfonamide drug, specific serum therapy should be used in all patients who are critically ill, in whom clinical examination indicates a prognosis of more than usual severity due to advanced age, the presence of complications, or bacteremia.

When a patient with pneumonia is first seen by a physician, it is frequently possible to state that the prognosis is fair or poor, as the case may be. Certain laboratory data will supplement the clinical impression, and one of the most important examinations is to determine whether or not bacteremia is present. In a large series of cases collected from various sources the mortality rate in bacteremic patients treated with sulfapyridine alone was 23 per cent, whereas in the non-bacteremic group the death rate was only 4.5 per cent. If one waits for information as to whether the blood culture is positive or negative, enough time may elapse for the intoxication to become so profound that no therapeutic measures will avail. For this reason a rapid bacteriological diagnosis by sputum examination as early as possible is of great importance, so that sulfonamide therapy may be supplemented by specific serum therapy when necessary.

Another group of cases in which the bacteriological diagnosis is important is that in which no response to chemotherapy is obtained even though the patient's condition is apparently favorable at the time treatment is begun, and in whom, despite adequate blood sulfonamide levels, the acute process remains active or becomes progressive. In the absence of complicating lesions, for example, empyema or some other purulent focus, lack of response may be due to sulfonamide-fastness of the invading pneumococcus. Susceptibility to the bacteriostatic action of the sulfonamide drugs varies somewhat in different strains of pneumococci, even though contact with a particular drug has never occurred. Furthermore, fastness may develop during treatment, so that the organisms become resistant to the bacteriostatic action of the drug. It is fortunate, however, as we have shown,[4] that upon the acquisition of fastness the organisms do not lose their type-specific characteristics and are still fully susceptible to the therapeutic action of type-specific antipneumococcus serum.

It is of great interest that once sulfapyridine-fastness has developed in a strain of pneumococcus this characteristic is retained even though the organism is passed serially in many normal animals or in artificial culture media. Because of the persistence of acquired fastness, it is possible that the occurrence of localized epidemics due to drug resistant strains may appear. It is also well to remember that pneumococci which are fast to sulfapyridine are also fast to other sulfonamide derivatives, so that in order to treat patients suffering from infections due to fast strains, the sulfonamide drugs are of little avail, and use must be made of type-specific antiserum.

In vitro tests for the rapid and accurate determination of sulfonamide-fastness have not been practical up to the present, since the usual culture media contain varying amounts of substances which inhibit or annul the bacteriostatic action of the sulfonamide drugs. Inhibitors are present both in peptone [5] and in the meat infusions [6] used in the preparation of culture media. The importance of inhibitors of the sulfonamide drugs is only gradually being recognized, but it is well to remember that they occur not only in culture media, but in the bacteria themselves and in certain tissues and fluids of the animal body.

The presence of inhibitors in bacteriological culture media masks the *in*

TABLE 1

Bacteriostatic Effect of Sulfapyridine on Pneumococcus Type I in Peptone Broth and in Liver Infusion

	*Growth of Pneumococcus Type I * Concentration of Sulfapyridine*							
Medium	1:5,000	1:10,000	1:20,000	1:50,000	1:200,000	1:500,000	1:1,000,000	0
Peptone broth	—	++	+++	++++	++++	++++	++++	++++
Liver infusion	—	—	—	—	—	++++	++++	++++

* Degree of growth estimated by gross turbidity after incubation at 37° C. for 24 hours
++++ = maximum growth
— = no visible growth
Inoculum: 4,000 cells in a volume of 2.0 cc. of the respective media

vitro effect of the drugs and is the greatest source of error in determining accurately the susceptibility of bacteria to these compounds. It has been possible to devise a simple *in vitro* test to determine the susceptibility of various bacteria to the sulfonamide drugs. This test depends for its accuracy upon the use of a culture medium which is free of sulfonamide inhibitors and which will support the luxuriant growth of such fastidious microörganisms as the pneumococcus or hemolytic streptococcus, without the addition of peptone.[6] An infusion of fresh calf liver prepared on the acid side, and sterilized by filtration, has proved satisfactory, since pneumococci and many other microorganisms grow profusely in this infusion to which no peptone has been added. Moreover, if the infusion is prepared from fresh, unautolysed liver it is free of sulfonamide inhibitor.

The difference in the bacteriostatic effect of sulfapyridine upon the growth of a strain of pneumococcus Type I in peptone-containing broth and in the specially prepared liver infusion is shown in Table 1. In plain broth sulfapyridine in a concentration of 1:10,000 is required to cause bacteriostasis, whereas in the liver infusion bacteriostasis occurs in dilutions of the drug as high as 1 part in 200,000.

The bacteriostatic effect of sulfapyridine on the parent and sulfapyridine-fast variants of the same strain of pneumococcus Type I is shown in Table 2. The tests were carried out in the liver infusion. In the case of the fast strain a 1:10,000 concentration of sulfapyridine is necessary to inhibit growth, whereas a dilution of the drug as great as 1:200,000 is partially bacteriostatic for the parent strain.

It should be emphasized that unless an inhibitor-free medium is used, tests for the susceptibility of bacteria of any species to the sulfonamide drugs are unreliable and may be wholly misleading. It is important, therefore, that a standard technic be employed in labora-

TABLE 2

Bacteriostatic Effect of Sulfapyridine on Parent and Drug-fast Strains of Pneumococcus Type I in Liver Infusion

Strain of Pneumococcus Type I	*Growth of Pneumococci * Concentration of Sulfapyridine*							
	1:5,000	1:10,000	1:20,000	1:50,000	1:200,000	1:500,000	1:1,000,000	0
Parent	—	—	—	—	+	++++	++++	++++
Sulfapyridine-fast	—	+++	++++	++++	++++	++++	++++	++++

* Degree of growth estimated by gross turbidity after incubation at 37° C. for 24 hours
Inoculum: 4,000 cells of the respective strains in a volume of 2.0 cc. of liver infusion

tories generally, in order to determine the occurrence of sulfonamide resistant strains and to evaluate their importance as a cause of failure of chemotherapy in pneumonia. Sulfonamide resistant strains have been encountered in a small proportion of pneumonia cases, but their general incidence is unknown. From the point of view of therapy it is well to emphasize that strains of pneumococcus which are sulfonamide-fast are fully susceptible to the action of type-specific antiserum.

In the course of this discussion mention has not been made of pneumonia due to agents other than pneumococci, since under ordinary circumstances other bacteria are responsible for only a relatively small proportion of the total number of cases. From the point of view of epidemiology and prognosis the desirability of knowing whether hemolytic streptococcus, or staphylococcus, or *Hemophilus influenzae* is the infecting agent, should not be overlooked. From the therapeutic point of view this is also of interest, since already there is a limited amount of evidence which indicates that one chemotherapeutic agent may be more useful than another in the treatment of pneumonia due to one or other of these infectious agents.

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Principles of Administration Applicable to Health Departments*

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ALTHOUGH volumes have been written on the theory and practice of public administration, no one as yet has had the imagination, capacity, and the courage to set down those intangibles which go to make the difference between the trained technician who can get things done and the trained technician who cannot. The volumes have dealt with the tools of administration—organization, budgets, accounting, planning—nothing about the administrator himself. Tools are necessary adjunct to effective administration just as they are to carpentering. But all the tools in the world would not make me into a respectable carpenter, nor will they make a technician into a respectable administrator—unless he possesses the fundamental qualities. I certainly have not the ability to enumerate the personal practices that are fundamental to sound administration. But I have learned to recognize some of them, even if I do not always practise them. If you are a good administrator you will recognize the few I mention and doubtless could add a dozen or more yourself.

All of us know that the first rule of effective administration is to appoint subordinates who are smarter than you are. There is no need to fear that they will get your job some day because if you are smart enough to pick smart people you will be smart enough to hold your job in spite of them. And they are probably the people who are doing the real work that makes your job possible. An administrator is no bigger than the aggregate of his subordinates.

Probably the second rule of effective administration is to give subordinates as much credit as you can and still not build their reputations beyond their capacities. It is not fair to overdo the matter. You may build a man up to beyond his capacity to deliver on a new job. But there is more chance of underdoing the credit business than of overdoing it.

There is a corollary to that rule—never stand in the way of promotions. Losing a key man hurts sometimes. It may injure an organization and leave highly important jobs unfinished. Under those circumstances, is the loyalty of an administrator due his job or his men? In my opinion, the loyalty runs to the man and an administrator who steals his subordinate's opportunities to do bigger and more remunerative things is as reprehensible as if he had stolen his purse or his wife's affections.

Selfishly, the reputation of every administrator is enhanced no end by

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capable associates who have gone on to upper ranks, appreciative for the training and opportunities given them.

In appraising the capacities of subordinates, it is well to remember that they are usually much larger than you believe. Every administrator instinctively measures his associates by the yardstick of his own personality and his own methods. In so far as characteristics deviate from that yardstick, he too often assumes them to be inferior. They may only be different—and that very difference may be a superior asset. At any rate, give the subordinate a chance to do a bigger job. He may do it differently from your way. It may be a better way.

If there is another commandment in dealing with subordinates, it is to keep lines of authority straight. Possibly nothing wrecks an organization so fast and so effectively as not to know where responsibility rests. Accordingly, the unforgivable sin of an administrator is to cut around those next in command and to give instructions directly to the ranks below. It is not only the matter of possible confusion that is important —it is the matter of morale. The most effective way to encourage insubordination and general discontent is to go splashing orders and instructions about regardless of your organization chart—making privates believe they are majors and majors believe they are nothing at all.

Don't try to handle details yourself —which is another way of saying don't know any facts you don't need to know, but be very sure of the ones you do need to know. You cannot know and are not supposed to know the multiplicity of detail involved in carrying on a considerable number of activities. To try to know these things means misstatements and eventual embarrassment. Let subordinates do that remembering for you—and accurately. It is no detriment to good administration to consult a subordinate when information is required, or to present him to a group of outsiders when necessary, and it may help his ego and your business.

Don't ask your superior to approve detailed plans you are sure of. The mere asking raises doubt as to expediency, and questions about your capacity. It is far preferable to report to your superiors something already finished successfully than to inquire as to the feasibility of your plans for the doing of it.

If you are going into a conference in which there may be a challenge—take your gang with you. One of your associates may think up the right answer while you are stumbling over it. Or he may succeed in so confusing the issues that the opposition will be wholly in the dark. Loud talk and confusion may snatch a victory out of defeat. This administrative technic is particularly good at public hearings.

Don't answer letters promptly. Letters answered when you have first read them and your mind is full of the subject, are likely to be long and gossipy. Every administrator probably spends more of his own time and that of his secretary in writing silly and unnecessary letters than he does in real work.

Long letters are seldom read—you do not read those you receive yourself. It is said that Andrew Carnegie never read a letter longer than one page. Usually what you can say in a page you can say in a paragraph; what you can say in a paragraph you can say in a sentence—if you think about it long enough and hard enough. Thinking long and hard about the written word is important because probably the two most difficult tasks of our generation are to make money earn 6 per cent and to write the King's English so the other fellow can understand it.

There are many other rules that might follow under the head of what might be called "problems of personnel leader-

ship." I have others in my notes, but I pass them over for one concluding rule of importance. That rule is—always be kind to secretaries. The route to every "brass hat" is through the telephone operator and the girl (occasionally the man) who does a good deal of his thinking for him and much of the making up of his mind. A friendly voice in the mayor's office may be worth more than all of the technical tools of administration you can learn out of text books.

If I needed a text on which to hang this discussion of the tools of administration, I could find it in the language of one of the greatest administrators of all time, Samuel Pepys—an administrator who, during the great London plague and at the time when the Dutch were sailing up the Thames with brooms at their mastheads, was laying the foundation of the British Navy. He said that this day when he was walking in Drury Lane "I did see two or three houses marked with a red cross upon the doors, and 'Lord have mercy' writ there; which . . . put me into an ill conception of myself and my smell so that I was forced to buy some roll tobacco to smell and to chaw, which took away the apprehension."

This is not an effort to drag the good Samuel in by his heels but rather to illustrate the primitive character of public health less than three centuries ago and to point out that probably very little of administrative technic was necessary in that field as compared to the one of building the British Navy with which Pepys was immediately concerned. The health officer of that time did not have to be a good administrator, because there was literally nothing to administrate. In this case, he might better have been a sign painter or a tobacconist. Without knowing too much about your profession, I suspect that until the last 50 or 60 years a health officer got along very well if he could nail up quarantine signs.

But today public health administration is a complicated, scientific business which begins with the recording of vital statistics and runs through the control of communicable diseases, the promotion of child hygiene, the control of occupational diseases, supervision of milk supply and of other food products, laboratory service, public health education, control of nuisances, supervision of hospitals and dispensaries, supervision of the construction and occupancy of buildings from a health standpoint, supervision of water supply and sewage disposal, supervision of public conveniences such as baths and comfort stations—and probably other items of which I have not thought.

A proper supervision of such a variety of activities requires something more than medical knowledge. The health officer must be something of a business man, an accountant, a statistician, a budgetary officer, a public relations agent, and even a hotel keeper in the sense that he is often responsible for the operation and maintenance of hospitals and similar institutions. To do such a variety of jobs requires every tool of administration at his command and these tools are not all of them to be found in a doctor's kit.

In this country, there are approximately 186,000 horse and buggy units of government—many of them units of health administration. In fact, in Wayne County, Mich., alone there are some 40-odd health units and, as I recall, only two or three of them with full-time health officers. In many of them a township supervisor—who is assessor, poormaster, and general factotum—is also the man responsible for quarantine signs and vital statistics.

Doubtless the unification of health units has been the subject of frequent discussions by your group, but I cannot emphasize too strongly that sound public health administration can never

follow as long as our metropolitan areas are cut up into minor contiguous districts, which makes integrated activities on behalf of public health impossible.

A second tool of public health administration in which new developments are taking place is that of the selection, control, and separation of personnel.

There are indications that the American public is getting thoroughly tired of a costly spoils system by which public jobs are the subject of political patronage with all the attendant evils. I say "tired" advisedly because in the last few years there has been more interest in the establishment of merit systems throughout the United States than in many years previous. I suspect that the next few years will see a rapid and wide expansion of the system of public employment by merit.

However, it must be borne in mind that styles and improvements in merit systems change just as they do with automobiles. Because a merit law met a certain situation 20 years ago does not mean that there have not been marked improvements in procedures over that period and frequent need for revision of existing situations.

Time does not permit more than the enumeration of two or three items that may be of interest to public health administrators. The first is the development of new examination technics in which larger emphasis than formerly is being laid upon personality and measurable mental traits in opposition to sheer book learning and experience. I do not claim that we know much about this field as yet, but I do believe that we are on the edge of discovering something about it and that, in a shorter time than we might think possible, civil service authorities will be looking into the aptitudes of candidates for jobs as well as at their immediate capacities to perform them. And this change in the attitude of civil service authorities will come just as fast as health officials and other public officials insist that it come.

Next is a different attitude toward the closed or open backdoor with respect to public employees under the merit system. In the past, most backdoors have been closed, that is, a public employee could only be dismissed after his superior had proved him guilty of serious derelictions of duty. I believe that this provision in civil service laws has done a good deal to undermine public confidence in the merit system and to retard its development. The public is often disgusted with the discourtesy and incompetency of employees which exist simply because they feel that they are free from discipline. The intelligent public official is equally disgusted with a system which hinders the dismissal of the incompetent. I realize that we live in a time when many groups are coming to believe that a man has a vested interest in a job which he holds. I hope I am sufficiently socially minded to appreciate this point of view. But it is possible that there may be developing a compromise between a wide open backdoor which permits a public officer to fire a public employee without a hearing and without cause and a closed backdoor which prevents him firing one for anything less than a hanging offense. The compromise may be slow, but it will be expedited if public officials will come to the aid of citizen groups which are concerned with improving the personnel systems of public agencies.

A third feature of the merit system which is perhaps worthy of some consideration is the possibility of utilizing a somewhat different type of merit agency in those departments that have serious disciplinary problems. I refer particularly to police and public health, and sometimes wonder whether we should have a uniform merit system that applies the same rules and regulations to all the varied groups in public service. In Detroit, when it was pro-

posed that the entire police department be placed under civil service, some of us concluded that the selection and promotion of policemen should not become a cut and dried matter but should be administered by a separate merit board, the control of which would lie largely within the police department itself, but with adequate safeguards of publicity to prevent political chicanery. In consequence, a police merit board was created which follows none of the ironclad rules of selection, promotion, and discipline that are found in ordinary civil service laws, but which operates in such a fashion that favoritism and corruption in those same selections and promotions and dismissals cannot easily enter.

I mention this because health authorities also employ doctors and nurses who must be under the strictest of discipline and where it might be to the advantage of the public for control to remain with the health officer.

A further new development is in the field of budgetary control. Nearly a quarter of a century ago, I had the privilege of talking to this same group and, if I recall correctly, talked upon the subject of budget making because it was a new idea in administrative procedure. In those days, even the United States Government had not yet adopted a budget procedure, and scientific budget making was a new and somewhat untried device to bring about a more effective operation of public departments and a conservation of public funds.

The only new development in that field—although further development is much needed—is in budgetary control. Here the introduction of the allotment system in the last half-dozen years promises to have some effect on overspending and in the ultimate control of deficits. The value of the system of monthly or quarterly allotments of appropriations authorized by the legislative body has not been proved beyond doubt, but there are indications that we are working toward a system which will prevent an administrator from conciously or unconsciously overdrawing his appropriation which results in deficits and all of the evils of deficit financing.

Finally, one of the newest tools in the administrative field is that of long term planning. Here again there has been experimentation for nearly a generation but no well established principles have as yet been developed. Many long term plans having to do with physical construction have been prepared by cities and states, some of which have been followed rationally and others of which have been thrown into the discard after brief experiment. One would think that long term planning on public construction would be relatively simple—but unhappily such plans find it difficult to reckon with depressions and world wars and other catastrophies which upset the best of long range thought. However, it occurs to me that we have perhaps been neglecting the field of long term planning of operation budgets, although in certain areas such long term operating plans have greatest opportunity for success.

In education, recreation, public health, and other city activities, it would seem possible for an administrator to set down rather definitely the goals which he aspires to reach over a given period of years. I can well believe that a health officer in expounding his budget to a city council and to the public might speak in terms of what he hoped to do one year, five years, even ten years ahead, and would estimate something of the cost of the innovations he had in mind and something of the savings that might result from such innovations. I suppose that every health officer has secretly or semi-secretly thought of the substitution of

convalescent homes for certain types of hospitalization, deliberated on the extension of food inspection, calculated the years that might elapse before the development of full-fledged smallpox control, diphtheria control and whooping cough or scarlet fever control, but I venture that few have put down on paper the moves that should be made and the financial elements involved in each.

We are all going to hear more about long term planning in the years to come when budgets are likely to be more slender in view of current events and when public officers will be required to defend with great clarity any proposal looking to the expansion of activities or even their continuation at current levels. It is probably needless to say to you that the many billions of dollars that are now being siphoned off for relief and preparedness are not going to be available for the purposes that are closest to your heart. Whatever the causes of present calamities may be, we must understand that, as a result in the years to come, there will be less education, less public health, less police protection, more holes in street paving and longer intervals between the collection of garbage.

The public servant who renders the most effective service will be the one who has innate capacities for administration and who can strengthen those capacities by the use of the tools of administration that are now available so as to render effective service at a minimum of cost.

A County Program for the Care of Prematures*

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IN 1936 Cattaraugus County† mapped out a new program for mothers and infants. The infant mortality and neonatal mortality rates for the years 1931–1935 had been 64.6 and 43.5 respectively, with 28.6 per cent of all infant deaths associated with premature birth. The problem of the premature infant, as in other communities, thus seemed to be a major one, and the special program outlined below was initiated.

FINDING THE PREMATURE INFANT

How are premature babies located? If one is to be delivered at home, the physician may call the nurse to accompany him. Or he may telephone the nurse soon after the baby has come, telling her the baby has arrived prematurely, and asking her help in caring for it. The more this service is known and understood among physicians, the oftener the district nurse is called.

Our county health office also locates premature infants via birth certificates. For two years and a half we had a special form, bound with the birth certificate, but sent by the physician direct to us, on which was indicated, among other items, at just which month of gestation the baby was born. Notice of a premature stirred us to immediate action. We telephoned the physician to learn if the baby were still alive, and if so, what we could do to help. These special slips were discontinued on December 31, 1939. Since that time the state has provided special birth certificates, on the back of which is a similar special report. These are sent in by the local registrars, three or four days after birth possibly, but still frequently in time for us to be of some service.

EDUCATIONAL ACTIVITIES

Having found the prematures, the next task is educational. We ourselves must learn the best modern ideas for caring for prematures, consider how those methods can best be adapted to our local conditions, and expose to those ideas, one after the other, the people in our community, doctors, nurses, and others who take care of prematures.

We began with our own staff. Our supervising nurse on a vacation trip visited the Sarah Morris Unit of Michael Reese Hospital in Chicago and later, through the courtesy of the Massachusetts State Department of Public Health, took a 2 week course in care of prematures at the Boston Lying-in Hospital. Our medical consultant was sent to Chicago for a few

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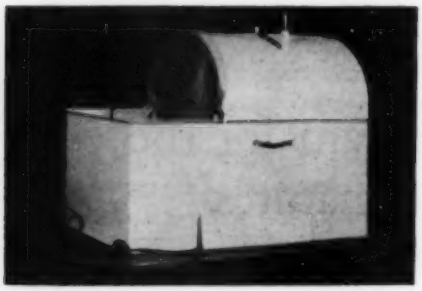
† With the aid of the Children's Bureau and the New York State Department of Health.



Portable home incubator devised in Cattaraugus County

days. At various times our commissioners visited other hospitals with special facilities for the care of premature infants. The literature in the field was reviewed by local staff members. Through formal programs in staff meetings and through consultation by the supervising nurse in dealing with individual cases, the information gathered was passed on to our nurses in the field.

For the practising physicians, we planned an institute under the auspices of the Maternal Welfare Committee of the County Medical Society. An able young pediatrician of Rochester was invited to speak on medical problems, and our supervisor spoke on nursing care. The meeting was held at night in a local hospital and was well attended. We took advantage of the presence of the out-of-town speaker to hold a meeting for nurses that same afternoon, when much the same program was presented. Twenty-eight hospital, 8 private duty, and 18 public health nurses attended in the afternoon, and 40 practitioners in the evening.

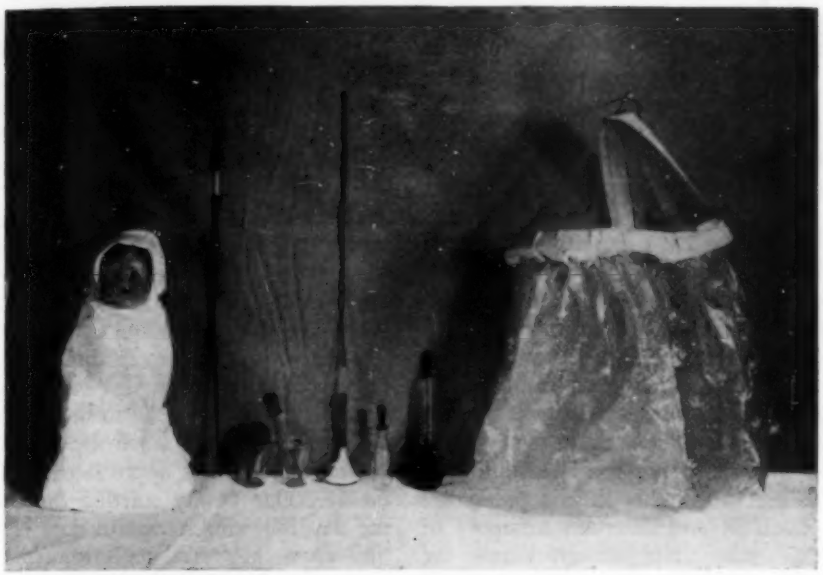
But education must be a continuing process. Our consultant is called on by the physicians in individual cases—we would like to have this done even more extensively. Our assistant commissioner was appointed Consultant on Maternal and Infant Hygiene on the staff of one of our hospitals. Here he is in a logical position to promote modern ideas on care within the hospital, and to arrange for care by public health nurses when prematures are discharged from the hospital. We have in mind the preparation of a pamphlet on premature care under local conditions. Perhaps it should be in three editions—for doctors, for nurses, and for parents.

THE PORTABLE INCUBATOR

We have made rather a point of providing portable incubators for home use. A local metal products plant was induced to make incubators similar to those used in Chicago. Various improvements were suggested—a hinged top by a nurse, a thermostat by a doctor, a painted finish, and so on. Finding suitable thermometers and thermostats took time. Most of our incubators are used in homes with electricity, but several are built to employ hot water bottles or heated bricks, for use in homes without electricity. We now have 14 incubators, located in 8 district nursing stations over the county.

We have found various advantages in providing incubators. Here is tangible evidence that work for prematures is not just a vague program. The incubator provides much needed heat for the tiny baby. It is also a solid reminder that this baby needs special care. An incubator makes it easier to keep visitors away, thus helping prevent infection, and easier to hold to an unusual and strenuous feeding schedule.

Every physician in the county knows that he can get an incubator by calling the district nursing station. Such a call receives immediate attention, day or night. A record is kept in the central office of the wherabouts of each incubator, enabling us to supply an additional one or a special model on demand. If a nurse is called for home delivery ahead of scheduled time, she takes an



Equipment used in care of premature infants:
1. *Doll (for demonstration)*
2. *Catheter for aspirating throat*
3. *Rubber syringe for aspirating throat*
4. *Medicine dropper with rubber tip*
5. *Gavage equipment*
6. *Small nursing bottle (1 oz.) with soft rubber nipple*
7. *Feeder of the Breck type*
8. *Improvised oxygen tent for use in crib.*

(reading from left to right)

incubator along. Every hour saved helps.

While our hospitals usually have more elaborate incubators, our portable ones are frequently a help. If a second baby is born underweight, the newcomer goes into the hospital incubator, the older premature graduates into one of ours. Frequently, too, a premature is going home—he is doing well, the family needs to save money, home conditions are promising, but he will be better off with special provision a while longer. One of our incubators is sent to the hospital and he goes home in it.

RÔLE OF THE PUBLIC HEALTH NURSE

Our own public health nurses naturally play a special part in our program for care of prematures. Nursing care is based on three main principles: (1) maintenance of a stable body temperature, (2) assistance with proper feeding, (3) prevention of infection.

In addition to the heat supplied by the incubator, a double flannel jacket with a hood is used. This was adapted from a model at Boston Lying-in Hospital and a supply was made up for each District Health Station by the local nursing committee. Recently each incubator was supplied with a roll of sterile cotton about 33″ long in which a new-born premature might be enveloped immediately after birth to prevent initial heat loss. We have found that in most home deliveries of premature infants the home is not too well prepared and the room in which

the birth takes place may be chilly. Help is limited, and at best a blanket or diaper is loosely wrapped around the baby while necessary care is given the mother. Or it may take considerable time to heat the incubator—in either of these events, the baby will be warmer in the cotton.

One of the most important functions of the public health nurse is to stress the importance of breast milk from another mother in the community until such a time as the mother's own supply is adequate. Village or rural people are apt to be unusually interested and willing to help in such an emergency. The nurse also has a responsibility in assisting the mother of the premature to establish and maintain a supply of breast milk. Not enough nurses are convinced of the value of breast milk or know how to teach manual expression—a nursing job and one which cannot be shirked if good care is the goal.

Feeding apparatus for home cases is necessarily simple. Most widely used is the medicine dropper with rubber tip and medicine glass. A 1 oz. bottle with a special small soft nipple has also been found an invaluable aid not only to the infant but also in showing the family how very small an amount of feeding is adequate at one time. The medicine droppers and small bottles which we use are the type in use at Sarah Morris Hospital, Chicago.

Occasionally a doctor suggests a feeder of the Breck type. We have one in the department which has been loaned and demonstrated several times. The small bottles mentioned before are also loaned out to families since it is usually impossible to purchase such equipment locally. Gavage feeding has not seemed practical for home cases unless a special nurse is available.

Hand washing is the keynote in our campaign against infection. Masks seem risky unless very carefully handled, and are not commonly used. Careful boiling of feeding equipment is stressed, but is the most difficult procedure to carry out in some rural homes. It takes so long to boil bottles, nipples, etc. over a wood fire that the value is not always appreciated by the family. One family startled the nurse the day following a careful demonstration when they said, "Nurse, did you you say to boil the bottle or just dip it in hot water?"

Home care of premature infants cannot help being time consuming. Careful detailed demonstration and discussion of each point is necessary. Someone in the home must be definitely responsible for the infant at all times. Upon the public health nurse falls the responsibility of interesting her doctors, patients, and committees in better care for prematures and, most important, of always being on hand to offer her own services.

Such is our program, and when new ways are found of helping prematures, we want to know about them and pass them on to our doctors, nurses, and parents.

Observations on the Familial Incidence of Cancer*

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DURING the past two years, one of the elements of the general research program of the National Cancer Institute has been an effort to study cancer primarily from an epidemiological point of view. One aspect of this study includes the interview by personnel of the Cancer Institute of individuals with authenticated diagnoses of cancer admitted to certain coöperating institutions.

The work was begun in Memorial Hospital, New York, in August, 1938, extended to include Hines Veterans Hospital, Chicago, in September, and further extended to include Charity Hospital, New Orleans, in November of the same year. In February, 1940, the work was transferred from New Orleans to the Barnard Free Skin and Cancer Hospital, St. Louis. It is a pleasure to acknowledge gratefully the assistance rendered by these institutions and their coöperation in making their cancer patients available to us for interview.

The epidemiological schedule was designed to provide data which would serve as a basis for a study of the extent to which a variety of factors (occupational, environmental, familial, racial, dietary, economic, medical, and social) may be related etiologically to cancer of various forms and anatomical sites.

The purpose of this discussion is to present the results of observations made to date on the familial incidence of cancer as recorded for members of families of patients with microscopically verified cancer of certain selected anatomical sites. Aside from the results which are altogether tentative, because of the small numbers involved, the character of the data and the general method of analysis are thought to be of some special interest.

The hereditary origin of cancer has long been a popular doctrine and the part played by heredity has been one of the most actively investigated branches of cancer research. In spite of this, the extent of its influence upon the incidence of human cancer is not known nor may it be assessed quantitatively even though one uses most of the clinical data recorded in the literature.

In a vast majority of the almost innumerable instances of reports in the literature, results of such clinical studies are reported in terms of the percentage of cancer patients giving a history of cancer in one or more relatives. Obviously, results stated in such a manner, in order to be significant, must take into account the number of relatives observed, the degree of their relationship to the patient, and their age distribution. If this is not done, no common denominator is available for an expression of differences between various clinical groups. For example,

* Read before the Epidemiology Section of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 8, 1940.

it is quite clear that a negative familial history of cancer of a patient whose father died at age 30 from an accident and whose mother died at age 28 from puerperal causes, and who had only one brother and one sister both of whom died in infancy, would in no way be comparable with the negative history of another patient whose parents survived to the seventh or eighth decade and with six siblings all of whom had also survived to reach the cancer age.

The familial experiences of these two patients, however, can be placed on a comparable basis through the employment of a modified life table procedure, taking into account the ages of the parents and siblings at the time they came under the observation of the patient, the ages at the time they were dropped from observation (ages at death or present ages if living), and the number of years of life during the period of observation. In this way their cancer experience is expressed as the number of deaths from cancer in proportion to the number of years of life spent at various ages.

The epidemiological schedule, referred to above, contains the data necessary for this method of approach. The record includes among other items, the age, sex, and color of the patient, the age of probable onset, and the anatomical location of the primary site of cancer, the dates of last observation of each parent and all siblings, their ages at the time of last observation and their status, i.e., whether living or dead, and if dead whether or not they died from cancer and, if so, a further statement, wherever possible, as to the primary site of the disease.

For purposes of recording their life table experience, the parents may be assumed to have been under observation from the time the patient was born until the date of death or of last observation if living. Obviously the life experience of the mother up to the date of the birth of the patient, and of the father up to within a short time prior to the patient's birth can have had no mortality, does not come within the period of observation of the patient and therefore is of no concern in the present record.

In the case of the siblings, while all of them are entered in the record, those dying or otherwise dropped from observation at ages under 25 years are excluded from the present tabulations because of the uncertainties of the informants as to the particulars of dates, ages, and causes, and also because of the negligible cancer mortality known to obtain during this period of life. For present purposes the observed life experience of all siblings surviving age 25 is assumed to begin at age 25 and continues to the age at death or the age at last observation if living.

From these data the life-experience of both parents and siblings may be expressed in terms of person-years of observation, divided into appropriate age periods, and the number of these person-years represents an experience equivalent to that obtained by observing a corresponding number of persons over a period of one year. Cancer deaths recorded during this period of observation thus if desired, could be expressed in terms of annual mortality rates.

As an example, assume a cancer patient aged 62, at the time of interview in 1940. The father died from diabetes at the age of 58 in 1907; the mother died from cancer of the breast at the age of 51 in 1902; three brothers were living and well at ages 54, 57, and 59 respectively in 1940, one sister died in 1932 from lobar pneumonia, at the age of 56. In this instance the father came under observation 62 years ago, at the age of 29 and remained under observation for 29 years, i.e., until the age of 58 when he died from diabetes. Thus the life-experience under obser-

vation totals 29 person-years (one-half person-year at ages 29, and 58, and one person-year at each year of age from 30 to 57 inclusively). For life table purposes this is equivalent to observing 28 persons, one each at ages 30 to 57 for one year and two additional persons for one-half year, one at age 29 and one at age 58. Similarly the mother came under observation 62 years ago at the age of 27 and remained under observation for 24 years, i.e., until the age of 51 when she died from cancer of the breast. She therefore contributed 24 person-years of observation (one-half year at age 27, one year at each year of age from 28 to 50, and one-half year at age 51). Each of the siblings, for present purposes, entered observation at the age of 25 and continued to ages 59, 57, 54 and 56 respectively, each thus contributing one person-year at age 25 and at each year of ages thereafter except one-half person-year at ages 59, 57, 54, and 56 respectively. The life experience of all the siblings combined totals 128 person-years (34.5, 32.5 and 29.5 for the three brothers and 31.5 for the sister). The crude annual rate of mortality can thus be expressed, in the case of the father as the equivalent of one death from diabetes in 29 persons, for the mother one death from cancer of the breast in 24 persons, and for the siblings one death from lobar pneumonia in 128 persons. Age-specific rates could be obtained merely by applying the deaths which occurred at given ages to the number of person-years experienced at corresponding ages.

Some idea of the relative force with which familial factors express themselves in the genesis of cancer may be obtained by determining the number of deaths from cancer recorded for the parents and siblings of our cancer patients and comparing this number with that which might be expected to have occurred on the basis of a normal mortality experience. The normal or expected number of deaths is obtained by applying to the life table population the age-specific death rates from cancer which obtained in the U. S. Registration Area during the same period of time for which the life-experience of the study population is recorded. In this connection it was noted that in the case of parents, the life experience at ages 15 to 34 centered around the year 1890, at ages 35–44 around 1895, 45–54 around 1900, 55–64 around 1910, 65–74 around 1920, and 75 years and over, around 1930. In the case of the siblings life-experience at ages 25–44 centered around the year 1925, 45–54 around 1930, and at 55 and above around 1935. Consequently in arriving at the expected number of deaths, the death rates which are applied to the various age groups of the study population are those which obtained for the country at large at different periods of time.

The data here considered are from the records of 1,029 cancer patients including 522 white females and 507 white males. The females include 294 persons with cancer of the breast, 152 with cancer of the uterine cervix, and 76 with cancer of exposed areas of the skin; males include 256 persons with exposed sites of skin cancer, 131 with cancer of the lower lip and 120 with cancer of the lung.

Table 1 is included here to show the life-experience and the recorded mortality from all causes and from cancer, in the parents of all patients, combined.

The observed life-experience of all parents included in the records totals 64,570 person-years. Columns 2 and 3 in Table 1 show the death rates from all causes and from cancer which obtained for the country at large for the various age groups shown in column 1 and at the various dates shown in column 4. The number of deaths in parents from all causes and from cancer actually re-

TABLE 1

Observed and Expected Mortality from All Causes and from Cancer, in the Parents of 1,029 White Persons with Carcinoma of Certain Selected Sites

	Death Rates U. S. Registration Area			Person-Years Life Table Population	Deaths All Causes		Deaths From Cancer	
Age	All Causes	Cancer	Date		Observed	Expected	Observed	Expected
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
15–24	6.9	0.052	1890	1,477.5	10	10.2	0	0.076
25–34	10.2	0.124	1890	8,331.0	63	84.6	2	1.031
35–44	11.2	0.562	1895	14,712.5	165	165.0	12	8.262
45–54	15.0	1.395	1900	15,602.5	232	232.5	34	21.750
55–64	26.5	3.426	1910	12,916.5	356	342.1	61	44.390
65–74	52.0	6.000	1920	7,970.0	411	413.9	68	47.750
75+	129.0	9.900	1930	3,560.0	380	456.1	33	34.600
Total				64,570.0	1,617	1,704.4	210	157.859

ported by the patients interviewed are shown in columns 6 and 8. The numbers of deaths which would be expected to have occurred had these parents experienced mortality normal for the country as a whole are shown in columns 7 and 9. These numbers are obtained by applying the rates shown in columns 2 and 3 to the population shown in column 5.

Special significance of Table 1 lies in columns 6 and 7 which show the recorded and expected number of deaths from all causes. Except for persons at ages 75 years and above, there is excellent agreement between recorded and expected mortality experience. This close agreement may be interpreted as evidence of essential accuracy of the data and soundness of the procedure. The rather wide disparity between recorded and expected deaths at age 75 and above probably is due not to a failure to record all the deaths, but to extending (in the record) the life of the older parents beyond the ages to which they actually survived. The tendency to exaggerate the ages of old people appears to be a universal one. Thus it is probable that the number of person-years shown for age 75 and above is considerably in excess of the actual experience. Fortunately, however, for purposes of studying an excess of cancer mortality in the life table population as a whole, the error is relatively insignificant and in a direction which will add conservatism to the tentative results.

When cancer mortality is considered for the group as a whole (columns 8 and 9) it is of interest that 210 deaths were recorded in contrast with 158 expected, an excess of about 34 per cent. Except at ages 15–24 (where numbers are obviously insignificant) and 75 years and above (where a plausible explanation is available), the excess of mortality is quite consistently distributed throughout the life span of the parents, with no single age group showing any concentration of deaths out of proportion to that of the others.

The tabulations shown in Table 1 have been carried out separately for different groups of these 1,029 patients, divided according to primary site of disease and each of these further divided into those with onset of cancer below the median age for the whole group and those with onset above the median age.

Table 2 shows the data which relate to the experience of the parents of the 294 persons with cancer of the female breast. The median age of onset of cancer in these 294 persons is about 45 years. It will be noted that the parents of those patients whose breast cancer occurred at a relatively early age suffered a mortality from cancer more than twice as great as expected,

while in the parents of patients with late onset of disease, the number of cancer deaths does not greatly exceed the normal.

TABLE 2

Mortality by Age, from Cancer in Parents of White Females with Cancer of Breast: (a) With Onset of Disease at Ages 45 and Under, (b) With Onset of Disease at Ages 46 and Over

	Onset of Cancer in Patients at Ages 45 and Under			Onset of Cancer in Patients at Ages 46 and Above		
Age	Person-Years	Actual	Expected	Person-Years	Actual	Expected
15–24	167.5	0	0.009	180.0	0	0.009
25–34	1,295.0	1	0.160	1,051.0	0	0.131
35–44	2,216.0	4	1.250	2,020.0	2	1.138
45–54	2,295.0	8	3.200	2,100.0	4	2.922
55–64	1,807.5	11	6.190	1,740.0	6	5.952
65–74	892.5	14	5.350	1,105.0	10	6.640
75+	277.5	2	2.601	685.0	6	6.622
Total	8,951.0	40	18.760	8,881.0	28	23.414

Because of space limitations, additional tables are not included to show the detailed tabulations for the other clinical groups, but the data have been summarized and are shown in Table 3.

Table 3 shows for the six clinical groups of patients, these divided into those with early and those with late onset of disease, the number of deaths from cancer in parents and the ratio of this number to the number expected on a basis of normal experience. In addition the table shows the percentage of deaths in parents where the cancer in the parent occurred in the same site as in the patient, and also in the same sex as the patient. It is hardly necessary to emphasize here that although the study population is relatively large, the numbers of deaths recorded for the different groups are quite small, and any conclusions that may be derived therefrom would of necessity be tentative.

In the first column of Table 3, the clinical groups of patients are listed in the order of the excess of mortality in their parents, the ratios of observed to expected deaths varying from 1.84 for parents of white females with cancer of the skin to 0.82 for those of white males with cancer of the lung.

It is of particular interest to note

TABLE 3

Cancer Deaths in Parents of Patients with Cancer of Certain Selected Sites: (a) Ratio of Observed to Expected Number, (b) Distribution According to Same Site and Sex as Patient

	Cancer Deaths in Parents							
			Ratio Obs./Exp.		Per cent of Total Cancer Deaths in Parents Where Cancer Occurred in			
Site of Cancer in Patients	Number of Deaths	Ratio Obs./Exp.	Onset in Patient at Early Age	Onset in Patient at Later Age	Same Site as Patient	This Site in Rest of Parents	Same Sex as Patient	This Sex in Rest of Parents
Skin—Female	18	1.84	1.6	2.0	28.0	9.4	66.7	58.3
Breast—Female	68	1.61	2.2	1.2	25.0	16.2 *	64.7	56.3
Skin—Male	55	1.29	1.8	1.0	23.6	6.4	49.1	38.1
Cervix—Female	27	1.21	1.5	0.9	46.7	19.3 *	55.6	59.6
Lip—Male	26	1.15	1.6	0.7	15.4	2.2	38.5	41.3
Lung—Male	16	0.82	0.9	0.7	0.0	0.5	43.8	40.7

* Per cent of deaths in mothers only

that except for the parents of females with skin cancer (here the number of deaths is only 18) excessive mortality, where present, is confined to the parents of those patients whose cancer occurred at a relatively early age.

The last four columns of Table 3 show data which are of some interest from the point of view of site- and sex-specificity in the familial incidence of cancer. It may be noted here that of the 210 recorded cancer deaths in parents, 124 were in mothers and 86 in fathers. Column 6 in Table 3 shows for the parents of each clinical group of patients the percentage of cancer deaths where the cancer in the parent occurred in the same anatomical site as that of the patient. Column 7 shows for comparison the percentage of deaths among the parents of all the rest of the clinical groups where the cancer occurred in the same site as that in question. For example, 28 per cent of the 18 deaths in parents of females with skin cancer were recorded as due to cancer of the skin, while only 9.4 per cent of the remaining 192 cancer deaths in parents were due to skin cancer. In the case of the groups with breast and uterine cervix cancer, the percentages are based on deaths in mothers only.

Similarly column 8 shows the percentage of instances of fatal cancer in parents where the sex of the cancer parent is the same as that of the patient, with comparative figures for the remainder of parents shown in column 9.

For all sites except lung (and here the reliability of the data is open to serious question), there is evidence of a rather striking tendency to site-specificity in the parental incidence of the disease. Sex-selection on the other hand is hardly if at all noticeable.

The same general treatment of data has been carried out for the siblings of these 1,029 patients, the results of which are summarized in Table 4.

The siblings taken together contributed a total of 93,506 person-years of observation, and for whom there were recorded 134 deaths from cancer as compared with 94.2 expected deaths. Of the 134 recorded deaths, 56 were in brothers and 78 in sisters of the patients.

In Table 4, the clinical groups of patients are listed in the order of excess mortality in their siblings. The ratio of observed to expected deaths ranges from 1.8 in the siblings of patients with cancer of the cervix to 0.7 in those of males with cancer of the lung. Although not shown in the table, the evidence, in so far as it may be supported by such small numbers as these, as in the case of parental cancer, indicates that the excessive mortality

TABLE 4

Cancer Deaths in Siblings of Patients with Cancer of Certain Sites: (a) Ratio of Observed to Expected Number, (b) Distribution According to Same Site and Sex as Patient

	Deaths from Cancer in Siblings of Cancer Patients		*Per Cent of Cancer Deaths in Siblings Where Cancer Occurred in*			
Site of Cancer in Patients	*Number*	*Ratio Obs./Exp. = 1*	*Same Site as Patient*	*This Site in Rest of Siblings*	*Same Sex as Patient*	*This Sex in Rest of Siblings*
Cervix—Female	23	1.8	31.2	25.0 *	69.6	55.8
Skin—Female	19	1.7	21.0	14.8	47.4	60.0
Breast—Female	37	1.6	40.7	28.0 *	73.0	52.6
Lip—Male	14	1.3	7.1	5.8	35.7	42.5
Skin—Male	34	1.2	29.4	11.0	58.8	36.0
Lung—Male	7	0.7	0.0	0.8	57.1	40.9

* Per cent of deaths in sisters only

when present is confined very largely to the siblings of those patients whose cancer occurred at a relatively early age. This is particularly true of siblings of patients with cancer of the breast, cervix, and skin. It will be noted from Table 4 that there is also some tendency for site-specificity except in cases of lip and lung cancer, although the tendency appears to be less in the case of siblings than of parents. Sex-selectivity, however, especially in the groups of male skin, cervix, and breast cancer, appears to be more prominent than that shown in the parents.

Notwithstanding the small numbers on which these observations are based, there are certain general conclusions which, though tentative, appear to be reasonable. The incidence of fatal cancer in the parents and siblings of white females with cancer of the skin is nearly twice that which would be expected on a basis of normal experience: For patients with cancer of the breast and cancer of the cervix the familial incidence is more than 1½ times normal; for males with cancer of the skin, excessive familial incidence is noted only for those persons whose skin cancer developed at a relatively early age; for patients with cancer of the lip, familial incidence is only slightly in excess of normal, and for those with cancer of the lung it is considerably below normal.

Where an excessive familial incidence is noted it is almost invariably limited to the parents and siblings of those patients whose cancer developed early in life. This is especially true in the case of patients with cancer of the cervix, of the female breast, and males with cancer of the skin. For these three groups the familial incidence is from 1¾ to 2½ times the normal, but for these same clinical groups whose cancer occurred relatively late in life, the familial incidence is altogether normal. A tentative interpretation of these observations is that familial factors when involved in the genesis of cancer tend to express themselves relatively early in the life of the individual, while cancer of any of these specific sites which develops relatively late in life can more reasonably be ascribed to environmental factors.

Obviously an excessive familial incidence of cancer does not necessarily imply the presence of hereditary or genetic factors in the genesis of the disease. For example, taking both male and female patients with cancer of the skin, and considering their parents and siblings together, there was a familial incidence of 126 cancer deaths recorded, as compared with an expected number of 90.6. Thirty-two of these 126 deaths in parents and siblings (almost the entire excess) were stated to be due to skin cancer. It is conceivable that this excessive mortality from skin cancer in parents and siblings may be a function of certain environmental factors common to both patients and members of their families, and thus in no way related to innate conditions of heredity. Indeed it is quite probable that in the case of skin cancer a part, though not likely all, of the excess in mortality may be ascribed to environmental factors. The data at hand are too limited to allow for a more detailed breakdown for study from this point of view.

On the other hand, cancer of the female breast and cervix are much less likely to have origins from environmental factors which would be common to both patients and members of their families. Hence an excessive familial incidence of the disease in such cases may be assumed to be somewhat more probably of hereditary origin. Certainly a normal familial incidence in patients with cancer of the lip and cancer of the lung is presumptive evidence of the absence of heredity as a

predominant element in the genesis of these two forms of the disease, and, therefore, suggests for these two sites a relatively greater importance of environmental factors.

Finally these observations may be interpreted as in general agreement with an accumulating body of evidence that cancer of different forms and sites comprise different epidemiological entities, the circumstances and conditions surrounding the genesis of which will likely prove to follow patterns more or less characteristic for each separate group.

Antirabic Vaccination—Present Status*

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WITHIN the past 5 years laboratory workers have renewed their interest in rabies. This is due in part to the development of more quantitative experimental technics and in part to increased knowledge of neurotropic virus diseases, of which rabies is a classic member. Major developments have been, first, wider information on the amount of rabies in a community and, second, improvements in assaying rabies vaccines.

Knowledge of the incidence of rabies has been furthered through the use of the mouse diagnostic test.[1] Leach and his coworkers in Alabama [2] and Sellers in Georgia [3] report that approximately 11 per cent of specimens sent to the laboratory for diagnosis, and found negative according to the Negri body test, prove positive to the mouse test. Moreover, Denison and Leach report [4] that of 477 dogs found dead on the street or in the home and not suspected of being rabid, 5.2 per cent harbored rabies virus. Thus rabies proves more widespread in these communities than is ordinarily supposed.

With respect to rabies vaccines, a recent review of laboratory experiments [5] disclosed that results of tests on vaccines were in general irregular, and immunizing potency meager, with little superiority of one preparation over another. Finally, the need was plain for some quantitative, practical potency test.

To meet this need a quantitative procedure was developed in mice at the Rockefeller Institute, consisting essentially of (a) testing the virulence of a given preparation by injecting mice intracerebrally, and (b) measuring its immunizing potency in m.l.d. by vaccinating mice with the material and testing them 3 weeks later with graded doses of virulent virus.

The mouse test showed [6] in our hands that commercial vaccines containing virulent virus possessed considerable immunizing potency. Non-virulent phenolized preparations, on the other hand, whether designed for human or animal inoculation, generally failed to immunize mice. Non-virulent chloroformized vaccines immunized mice regularly, provided at least two times the stated dose was employed.

The results of the mouse test were checked in dogs and found similar.[7] Beagle dogs, aged 4 to 6 months and weighing 16 to 20 lbs., received the test vaccines according to the needs of the experiment. An equal number of unvaccinated dogs was set aside as controls. Three weeks later all were given a known number of m.l.d. of Negri body-producing, dog passage, virulent rabies virus into the neck muscles. The findings in the dog tests parallel those in mice in that phenolized vaccines found to be negative in mice proved likewise negative in dogs, and chloroformized vaccines, equivocal in mice,

* Read at a Joint Session of the Laboratory and Epidemiology Sections of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 11, 1940.

proved the same in dogs. Finally, larger doses of chloroformized vaccines proved effective, though irritative, in both mice and dogs.

Wyckoff and Beck [8] of the Lederle Laboratories, and Habel [9] of the U. S. Public Health Service have lately published results of their examination of the mouse test and regard it as a reliable method of evaluating anti-rabies vaccines.

Leach and Johnson are testing vaccines directly in dogs [10] with results thus far which do not differ materially from those already in the literature.

A number of workers are attempting to improve the various vaccines now on the market. Habel is reporting studies of the immunizing potency of different strains of fixed virus employed throughout this country in the manufacture of vaccines.[11] This is a basically important project. He finds that immunizing potency is apparently not related to degree of removal from street virus, to resistance of the virus to glycerin, nor to the species of animal in which it is carried. He finds immunizing potency related to ability of the virus to resist the killing effects of phenol and perhaps to the rapidity with which it is passaged. Other workers are making similar studies.

Experiments on optimum source of virus are under way in several laboratories. We have found that mouse brain culture virus [12] is virulent for mice when injected intracerebrally through the 10^{-3} dilution. When injected intraperitoneally as a vaccine, it proves harmless in doses as large as 1 cc. and, when injections of as little as 0.02 cc. are given, immunizes against 1,000 intracerebral doses. In dogs,[13] as much as 200 cc. of culture virus can be injected intraperitoneally without harm and as little as 1 cc. will immunize them against a lethal dose of virus given intracerebrally. Kligler and Bernkopf [14] have confirmed these results in mice.

These workers also report moderate success in immunizing mice with chick embryo allantoic membrane and chick embryo brain virus. And Dawson [15] finds that virus passed intracerebrally through chick embryos loses virulence for rabbits, yet immunizes them, although it does not lose pathogenicity so markedly for dogs and mice. In short, there is evidence that mouse brain culture virus immunizes both mice and dogs with a minimum of danger and, similarly, that chick embryo virus can immunize rabbits but not mice and dogs without danger.

It is our opinion, however, that no virulent vaccine, whether containing unmodified or modified virus, should be considered for mass vaccination until efforts to produce effective, non-virulent preparations have failed. The possibly harmful consequences of injecting virulent virus into a dog population cannot be assessed in the laboratory except to state that variations in virus disease-producing potentialities, particularly the changing of laboratory-induced variants back to natural types, are not unknown.

Attention in our laboratory has been concentrated, therefore, on developing an effective non-virulent vaccine. Commercial phenolized preparations have thus far proved generally of little potency. Chloroformized vaccines, on the contrary, give consistently suggestive results, but they are somewhat laborious to prepare and test, and irritative to the vaccinated animals. Ultra-violet light has been shown by several workers [16] to render neurotropic viruses, including rabies, avirulent with accompanying loss of immunizing potency. Tests from our laboratory,[17] however, showed that by proper exposure of rabies virus to ultra-violet light, virulence may be destroyed, yet immunizing potency retained.

Our first irradiation experiments were carried out with culture virus—1.5 cc.

of this material, suitably irradiated, was found to immunize mice against at least 10 to 100 intracerebral, and 32 to 64 intramuscular doses of virulent virus.

Lately Kligler and Bernkopf report that 1.5 cc. of formolized culture virus given intraperitoneally protects about 50 per cent of mice against an intracerebral injection of rabies virus.[18]

The next step in our experiments was to determine the minimum quantity of vaccine required in terms of mouse intracerebral lethal doses for a given species of animal. Repeated tests showed that for mice 1 cc. containing 50,000 mouse intracerebral doses, properly irradiated, gave good protection, whereas less than this amount, though sometimes effective, was not consistently so.

Similarly, for beagle dogs weighing approximately 500 times as much as mice, 500 times the mouse dose, or 500 cc., was required. Seventy-five cc. failed to immunize them. Apparently there is a relationship between weight of animal and number of mouse doses of irradiated virus required.

The problem, therefore, became one of securing a source of virus containing a greater number of mouse doses per cc., preferably at least 10,000,000. Attempts to increase the virulence of the culture virus have thus far failed, but by concentrating it tenfold in a freezing and drying apparatus, we found that 0.15 cc. gave mice as adequate protection as 1.5 cc. of unconcentrated vaccine. This concentrated vaccine, though effective in mice, would need to be given to dogs in doses as large as 50 cc. to furnish the necessary number of mouse doses.

Meanwhile we turned to infected mouse brain as a source of virus. Using this material, which is fatal through the 10^{-7} dilution, Dr. Casals found that if a 1 per cent suspension is centrifuged and the sediment discarded, a lightly opalescent supernatant results which can be rendered non-virulent in less than 30 minutes by ultra-violet light. This material, in a single injection of 0.1 cc. containing originally about 50,000 doses, immunizes mice adequately. Further experiments with it are in progress.

In conclusion, there is now available a practical, quantitative method for measuring the immunizing potency of vaccines. This method might well be used to standardize vaccines by requiring that 3.0 cc. of a preparation diluted 10 times and given in single or multiple doses immunize mice against at least 100 intracerebral lethal doses of test virus. Finally, it is encouraging to know that several groups of workers are developing and testing new preparations on the assumption that, given the proper material and technic, immunization against rabies with vaccines is a definite possibility.

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Typhoid Typing in the Western States*

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THE method of typing various strains of *Eberthella typhosa*, as developed by Craigie and Yen in 1938,[1] offers interesting possibilities to the health officer, the sanitarian, the epidemiologist, and others interested in the control of typhoid fever. The survey reported here was undertaken in an effort to bring the advantages of this method to the attention of those most likely to benefit by its use.

Time does not permit a complete discussion of the details of the typing method. The procedure is based on the use of a particular strain of bacteriophage, which is not only specific for the Vi form of *Eberthella typhosa*, but also exhibits a selective affinity for the strain on which it is propagated and for epidemiologically related strains. By selective propagation of this bacteriophage on various strains of *Eberthella typhosa*, Craigie and Yen,[1-5] have shown that it is possible to divide freshly isolated cultures into a limited number of readily distinguished types, which have been designated by the letters A to M inclusive, with the exceptions of I and K. Types B, D, E, and F have been subdivided, and these sub-types are designated by numbers following the type letter.

For details of the typing method, reference is made to the original publication of Craigie and Yen.[1] Figures 1, 2, and 3 demonstrate the appearance of typical plates.

It must be emphasized that cultures can be typed only when in the Vi form, which means that the percentage of successful typings depends on the handling of the cultures prior to submission for typing. Freshly isolated cultures which have not undergone prolonged incubation or numerous transfers should yield a very high percentage of successful typings.

In addition to the Vi and W forms, Craigie and Yen have described the so-called imperfect V form, which is a typical Vi form in every respect except

FIGURE 1—Typical Vi Form, Type F_2

* Read at a Joint Session of the Laboratory, Food and Nutrition, and Epidemiology Sections, of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 9, 1940.

FIGURE 2—Typical Vi Form, Type C, Showing Nonspecific Plaques Usually Produced on This Type

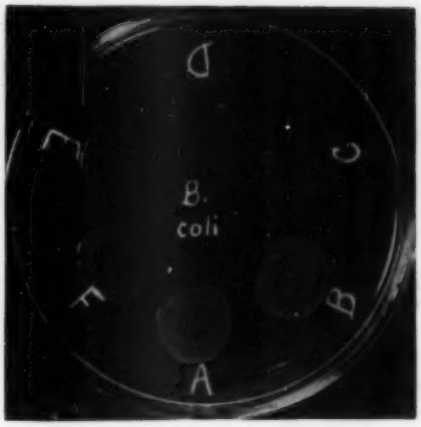

FIGURE 3—B. coli, Showing Failure to Respond

sensitivity to the typing phages. These forms cannot be typed at present, but newer procedures may make it possible to classify these strains in the near future.

This study, with material obtained through the courtesy of the many co-operating laboratories, has not only demonstrated many of the uses of the typing method, but has also given some indication of the distribution of the various types throughout the west. Table 1 shows the distribution of 465 cultures studied in the period from November 1, 1939, to September 1, 1940. It will be noted that types B_3, B_4, D_3, E_2, F_2 and G have not as yet been encountered in the area being studied. The figures in Table 1 also demonstrated that 96.9 per cent of the typed cultures fall into the 6 main groups A to F.

Since in many cases more than one culture was received from the same individual, Table 2 is included to show the distribution of the individual patients by states. It will be noted that 86.5 per cent of all those patients studied have been successfully typed, while the remainder of those investigated were represented by W or imperfect V form cultures. The per-

TABLE 1

Distribution of Cultures by States

	Type												*Imp.*		
	A	*B_1*	*B_2*	*C*	*D_1*	*D_2*	*E_1*	*F_1*	*H*	*J*	*L*	*M*	*V*	*W*	*Total*
California	24	2	6	10	1	1	28	42	..	2	1	1	16	10	144
Colorado	..	3	1	2	..	..	6	1	..	..	..	..	2	..	15
Idaho	..	..	..	1	..	..	..	1	..	..	..	..	..	..	2
Montana	..	1	4	1	..	..	2	1	..	1	..	..	..	4	14
Nebraska	..	..	..	1	..	..	2	..	..	..	..	..	..	..	3
Nevada	..	..	..	2	..	..	..	..	..	..	..	..	..	..	2
New Mexico	8	7	28	3	7	..	42	16	..	1	..	..	13	1	126
Oregon	25	1	4	11	6	..	20	18	..	4	..	..	6	1	96
Utah	1	..	2	10	3	..	..	..	..	..	..	..	..	2	18
Washington	7	1	2	2	4	..	9	..	..	1	..	..	6	10	42
Wyoming	..	..	..	..	..	..	..	..	1	..	..	..	1	1	3
Totals	65	15	47	43	21	1	109	79	1	9	1	1	44	29	465

TABLE 2

Distributions of Individuals by States

	Types											Imp.			Per cent
	A	B_1	B_2	*C*	D_1	D_2	E_1	F_1	*H*	*J*	*L*	*M*	*V*	*W*	*Total*	*Typed*
California	21	2	6	9	1	1	21	39	..	2	1	1	10	10	124	84
Colorado	..	3	1	1	..	..	5	1	..	..	..	..	2	..	13	85
Idaho	..	..	..	1	..	..	..	1	..	..	..	..	..	..	2	100
Montana	..	1	3	1	..	..	1	1	..	1	..	..	..	2	10	80
Nebraska	..	..	..	1	..	..	2	..	..	..	..	..	..	..	3	100
Nevada	..	..	..	2	..	..	..	..	..	..	..	..	..	..	2	100
New Mexico	8	6	20	3	5	..	31	11	..	1	..	..	3	1	89	96
Oregon	17	1	3	10	4	..	14	15	..	3	..	..	5	1	73	92
Utah	1	..	1	10	3	..	..	..	..	..	..	..	..	2	17	88
Washington	7	1	2	2	4	..	9	..	..	1	..	..	6	10	42	62
Wyoming	..	..	..	..	..	..	..	..	1	..	..	..	1	..	2	50
Totals	54	14	36	40	17	1	83	68	1	8	1	1	27	26	377	86.5

centage of successful typings should increase as the need for submitting freshly isolated cultures becomes more generally recognized.

Numerous possibilities regarding the application of the typing method are readily seen. Some of the major facts regarding the uses of the method are as follows:

1. All cases arising from a carrier will show the same type as the carrier, and therefore the same type as each other.
2. The typing of all known carriers in a given area will permit the immediate elimination of some carriers from consideration and the investigation of the activities of others when typhoid cases occur in the same district.
3. In any outbreak, the typing will show the minimum number of sources involved. The typing will often allow the detection of two or more concurrent outbreaks, and will also permit the separation of endemic and epidemic cases.
4. Typing of all cultures from a given outbreak will usually determine whether the epidemic is due to a carrier or to sewage pollution. If all cases show the same type, a carrier is probably responsible; if a variety of types is encountered, sewage contamination is probably responsible for the outbreak.[6]
5. Complete typing studies in a given outbreak will indicate definitely whether all sources of infection have been discovered.

Additional applications and possibilities will undoubtedly occur to the minds of those interested in this method.

A brief discussion of some actual uses of the typhoid typing method may be of interest.

Example 1—An outbreak of typhoid fever in Los Angeles City and County in the fall of 1939 was investigated by combined epidemiological and typing studies. The typing results showed a great preponderance of a single type, accompanied by scattered cases of nonrelated types. On the basis of the laboratory investigations, which were carried out in Denver without any epidemiological information whatsoever, it was possible to predict that the outbreak was due to a carrier discharging type F_1 organisms, and it was also possible to separate most of the sporadic endemic cases from the main outbreak. Epidemiological studies were in almost complete agreement with laboratory reports. When the carrier was located he was discharging the same type organisms as had been predicted. This was the first reported application of concurrent epidemiological and typing studies in a typhoid fever outbreak in the United States. It is regretted that the untimely death of Dr. Hyman Vener of the Los Angeles City Health Department prevented a complete discussion of this interesting outbreak at this time. The epidemic was caused by chocolate eclairs apparently contaminated by an intermittent carrier who cleaned the utensils used in pre-

paring the eclair fillings. The details of the outbreak are available in *Bulletin No. 64* of the Los Angeles City Board of Health Commissioners.

Example 2—A mother, aged 43, developed typhoid fever about 3 weeks after the last reported case in the Los Angeles outbreak. Her 5 year old son had been ill with what had been diagnosed as paratyphoid fever, on the basis of reports from a private laboratory. Investigation disclosed that the mother had nursed the child during the illness and while changing the child's shirts and gowns, she had placed in her mouth the safety pins used on his bedclothes. Cultures isolated from the mother showed the same results as those obtained from the carrier responsible for the contaminated eclairs. The mother denied eating eclairs, but the son remembered having eaten some. The story then became clarified. The son had developed a missed case of clinical typhoid and had secondarily transmitted the infection to his mother. Bacteriophage typing disclosed the relationship to the epidemic, and cleared up the epidemiology of these two cases.

Example 3—Type J cultures were received within a short time from the southern part of Washington and the northern part of Oregon. Due to the rarity with which this type has been encountered and the almost simultaneous arrival of the cultures, it was suggested that the matter be investigated more closely. It was found that the Washington culture was from a carrier and the Oregon culture was from a clinical case, the grandson of the carrier, who had visited his grandfather within the possible incubation period. This example points out the value of a centralized typing laboratory in correlating reports between states.

Example 4—A rancher in Washington sold milk to a confectionery. Clinical cases of typhoid developed in two purchasers of the milk and investigation showed the rancher to have been a typhoid carrier. The clinical cases and the carrier were typed by the bacteriophage method, and the results showed all the cultures to have been the same type. Such evidence is almost conclusive proof of the source of the cases, which is of course a matter of interest to the health officer and others.

Example 5—A resident of eastern Washington visited a friend in Seattle. On her return to her own home clinical typhoid developed. The Seattle friend was shown to have been a carrier. Both the carrier and the case gave the same results by the bacteriophage-typing method. In this example the typing reports aided in definitely establishing the source of the clinical case.

The above examples, chosen from many available, not only furnish additional evidence regarding the stability of types but also point out some of the ways in which the typing method may aid in establishing the source of infection in a given case, which is of course a matter of primary importance to the health department concerned. At the present time, it is not practical for the laboratories concerned to do their own typing, largely because of the lack of trained personnel. However, the method is easily learned and it is hoped that it will eventually be applied as routine procedure. Another alternative is the establishment and support of a centralized bureau for the typing and control of all known carriers, with financial aid supplied by the states interested or by the federal government. At present, typhoid strains will be typed and reported as promptly as possible. Data indicating the source of the culture and the status of the patient would be helpful in future evaluations of the method.

In summarizing, it is felt that the typhoid typing method of Craigie and Yen is proving to be a valuable and

sensitive tool in the control of typhoid fever. Properly applied, the method can be a useful adjunct to epidemiological studies.

In a survey of 465 cultures submitted from 11 states, the typing method has yielded valuable information in numerous cases. The procedure, when applied and used intelligently, is expected to do much to reduce the incidence of a once serious disease. The future progress of this work is obviously dependent on the aid and coöperation of all concerned.

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Some Trends in Public Housing*

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IT is possible to look back over two and a half years of public subsidized housing progress since the first project was completed in Memphis and to note some trends in accomplishments and policy as evidenced by the development of the program.

The influences motivating the initiation of the subsidized housing program under the PWA Housing Division were unemployment and the desire to stimulate the building industry. Housing for low income families was incidental. The projects were designed and built not to rent at definite rates in order to house a specific income group but to meet certain standards of design. Grants-in-aid and generous annual rental subsidies kept the necessary rentals at reasonable figures. The objective of providing housing for the lowest income group, upon which the program was largely justified, was not fully realized.

It was considered expedient, however, to support, promote and extend this program which was the only one promising something definite in the way of improved housing conditions for the poor, without waiting many years for a rise in the wage rates of the low income group. The program was continued under a new agency, the U. S. Housing Authority, and through the Local Housing Authorities.

There is rather general agreement that the dominating force in the program of the Housing Authority today is the desire to house adequately the lowest income group, and every effort is being made to lower the maintenance and amortization costs of new projects. Much progress has been made in this direction during these past two years.

INCOME LEVEL OF SELECTED TENANTS REDUCED

To compare two projects built in Memphis, there have been selected the first one built under the old PWA Housing Division program and the first to be designed and constructed under the U. S. Housing Authority program which is the third one for the city. The following table shows the rents and incomes of the families displaced by slum clearance and the rents and incomes of the selected tenants.

The downward trend of incomes of selected tenants is very marked. It seems significant that while the selected tenants for the third project were in approximately the same rental group as those selected for the first project, the Local Authority chose a group having an average income of only $65.82, while for the first project the average income of selected tenants was $94.10.

It is difficult to state accurately the economic level from which the third or

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TABLE 1

Comparison of Average Rents and Incomes of Selected Tenants as Shown on Their Application at Time of Selection, and Displaced Slum Dwellers at Time They Were Moved Out for the Razing of the Slum Dwellings in the First and Third Government Subsidized Housing Projects. Memphis, Tenn.

(Lauderdale Courts was built under the PWA Housing Division program and Lamar Terrace was designed and built under U.S.H.A. program. Both are for white tenants.)

	Lauderdale Courts (Completed 1938) (1st Project)		*Lamar Terrace (Completed 1940) (3rd Project)*	
	Selected Tenants at Time of Selection	*Slum Dwellers at the Time They Were Moved Out*	*Selected Tenants at Time of Selection*	*Slum Dwellers at the Time They Were Moved Out*
Average Rent	$21.09	$ 6.70	$24.25	$ 9.37
Average Income	94.10	34.41	65.82	56.61

Lamar Terrace Project group was picked but in the 1937–1938 survey it was shown that approximately 30 per cent of the population made less than $60.00 a month. Further reductions in rent are necessary either by similarly reducing maintenance and amortization costs or by increasing subsidies, if the bottom income group is to be reached by subsidized housing in Memphis.

It is believed that the group which should be benefited by subsidized housing programs should be nearer to the top of the bottom 10 per cent than to the top of the bottom 30 per cent.

RENTAL TRENDS OF SELECTED TENANTS

The trend of rents being paid by selected tenants, at the time of application for public housing, has been upward. This may have several explanations. Rents generally during the past few years have increased. In addition, the policy of the Local Housing Authority has been to select tenants in so far as possible on the basis of need as indicated by low incomes and poor housing. The families selected, although living in substandard housing, were undoubtedly trying to obtain the best housing possible for their limited incomes as shown by the high percentage of their salary going for rent (Table 1). The new rents for the group of tenants selected for the third project are less than the rents which they were paying before selection. This is most desirable for them as it im-

TABLE 2

Comparison of Rent and Income Schedules for Lauderdale Courts and Lamar Terrace

		Shelter Rent Not Including Utilities		*Average Annual Income at Time of Admission*	
No. Persons	*No. Rooms*	*Lauderdale*	*Lamar Terrace*	*Lauderdale*	*Lamar Terrace*
2	3	$13.50	$13.35	$828.00	$766.00
3	3½	16.85	13.60	912.00– 948.00	836.00
4	4½	21.75	14.85	984.00–1,020.00	905.00
5	5½	.....	15.85	1,056.00	968.00
6	5½	25.00	15.85	1,104.00	1,030.00

mediately makes available more money for other necessary expenses, such as food, clothes, and medical care. The savings in rent and utility costs in some cases will amount to as much as $15.00 a month. For such low incomes, these savings are probably as important as the better living quarters.

In the matter of rentals charged in the first three projects, there has been a gradual reduction. The same first and third projects as in Table 1 are shown in Table 2 with the rentals by size of apartment. There is a marked reduction particularly in the rentals for the larger units, which means for the larger families.

The Lauderdale, or first project schedule, has recently been revised so that the top rental instead of being $25.00 is $20.10. This provides a desirable reduction in rents for large families, with a smaller rent differential between small and large families.

MAKE-UP OF BOTTOM INCOME GROUP

A study was made of the people living in a sample of the poorest blocks of the city to classify the workers on the basis of employment. Among the colored, 1,661 were common laborers, porters, and store helpers, 380, charwomen or cleaners, 231, cooks in public places, 173 were washing clothes (not in a laundry), 171 were porters not in stores, and 158, truck drivers. Among the whites, 180 were classified as common laborers, porters, and store helpers, 18 as domestic servants, 16 as truck drivers, and 15 as salespeople in stores. This represents a total of 2,159 families, or about 2.5 per cent of the population of Memphis. It is a sample of the very bottom income group.

This enumeration of occupations of the poorest group is made only as a help in visualizing what these people do for a living. It is recognized of course that there are some too old to work, some feebleminded, some cripples and invalids who can never be considered eligible for government subsidized housing projects. It would seem that the percentage in this unemployable group, however, is not 30 but possibly nearer 10 or even less.

VACANCY AND DEMOLITION

Demolishing dilapidated dwellings as an effective means of improving housing conditions in a city has its limitations. In Memphis the percentage of vacancies in substandard housing areas has decreased progressively from 5.65 per cent in 1936 to 4.59 per cent in 1938 and to 1.5 per cent in 1940. A low percentage of vacancies makes a strong demand for housing and always results in rental increases. This is most undesirable unless there is a corresponding improvement in the housing furnished. A healthy vacancy ratio promotes competition and tends to adjust the rents to a fair figure. In any program using legal enforcement measures for improving the condition of dwellings, one of the major devices used is condemnation. A shortage of housing particularly in the slums, however, makes this device difficult to use. This caution applies more to the local government in the housing enforcement programs, although it is possible that the requirement of the U. S. Housing Authority may stimulate a wholesale condemnation campaign on the part of several city departments with unfavorable results. Under certain conditions, a rehabilitated dwelling is worth as much or more to the community than the same house demolished.

In the use of demolition for clearing slums, it is necessary to coördinate that action with the local relief administration in order that families which might otherwise suffer hardship through a thorough-going enforcement of existing demolition legislation will receive assistance through rental aid where needed. The difficulties in this pro-

gram will be the large number of people who will need this assistance and the existing policy of many—if not most—cities of not furnishing rents for minimum standard homes.

DEVELOPMENT OF A COMPREHENSIVE CITY HOUSING PLAN

Housing is related to health, and it is certainly desirable if not essential that health officials be prepared to influence properly any housing plan for the optimum benefit to public health. There is no doubt that all health departments are interested in securing and maintaining sanitary toilet facilities with safe water, safe waste disposal, and screens (especially in malarious regions). Leaking roofs, broken windows, rotten steps, poor ventilation, and lack of sunlight are also of concern to health workers, and most if not all health departments are trying to do something about these conditions where they are bad.

A study of the housing problem, in an objective way, would seem to indicate, however, that because of the lack of sufficient income of the tenants nothing significant or lasting can be accomplished through the usual health department enforcement program in the real slums even though carried on with determination. The local departments of health are perhaps the only agencies in the field today that can demonstrate this for their own cities and that can conduct housing studies to secure the necessary facts upon which to develop a sound housing plan for the city. Such a plan can include enforcement for blighted areas only where a large percentage of the population has sufficient income to finance needed repairs and maintenance.

Subsidized housing should serve those below the economic rent level, leaving the lowest 10 or 15 per cent or more as a relief problem. There is serious doubt in the minds of many as to whether it will be possible to reach lower than the cream of the low income group of most urban communities. To do this it will be necessary to change the requirements for tenant selection if the average slum dweller whether sick or healthy, whether a good credit risk or a poor one, is to be included. This may or may not make it necessary to lower the maintenance and amortization costs so as to lower the income standards for tenant eligibility. There is no doubt that the very bottom 5 or 10 per cent must be taken care of by either some form of family rent assistance or in some type of institutional care if they are to live in minimum standard housing.

Possibly the ultimate solution to housing the slum dweller in minimum standard housing will be in extending sufficient rental subsidy direct to those below a certain income level to make it possible for them to live in minimum standard housing as approved by municipal health departments. Such a plan would seem to go more to the root of the problem and would provide reasonably decent standards for a much larger number of tenants, at the same cost, than under the present subsidized housing building program. It would certainly simplify the problem of enforcement as no property owner would be justified in failing to maintain a minimum standard house because he would be receiving an economic rent. A combination of the present subsidized housing program with a coördinated direct-relief rental subsidy program would certainly stimulate an interest in the housing problem on the part of enforcement and relief agencies.

The solution to the problem is not simple but extremely complex. It is primarily a social and an economic problem, and its solution demands a sound diagnosis.

It might be stressed here that the sanitation programs of many city

health departments must be strengthened by qualified leadership before much can be done in analyzing the problem and exerting the desirable leadership in this phase of constructive city planning.

POPULATION SHIFTS

The question of population shifts is a difficult one to discuss without accurate and detailed surveys, and then only in a limited way as indicated by the specific project studied. In the three projects already completed and occupied, a number of factors have been responsible for several types of shifts of the population. The shifts at any one project may and usually do differ from the shifts at other projects.

An attempt is here made to list the several types of shifts noticed for the first three projects.

First—Shifts due to the group selected for the new project having a higher income than those displaced by the project by demolitions.

Second—Those due to displacing colored families with white families.

Third—Shifts in tenants due to demolitions or increases in rents for adjacent property following major improvements brought about either by legal enforcement demands made by the health or building departments on the owners or voluntarily due to the general improvement in property values after the new project is occupied.

Fourth—Those due to dwellings being converted to business uses or business property converted to dwellings because of the increase in buying power of the new tenants in the good housing project or to the forcing out of business use of dilapidated property and rebuilding residential property in the rezoned area.

DIXIE HOMES

In the first Negro project under the old PWA Housing Division program there have been no noticeable changes of any kind taking place since its completion about two years ago. There was, however, an almost 100 per cent example of slum shifting due to the large difference in incomes of the displaced tenants and the selected tenants.

SLUM SHIFTING

It may be of interest to speculate on where displaced tenants go. It is felt that they seek houses at least as good and if possible a little better than those they leave. This may not be possible if there is a shortage of homes for this rental group. However, it is believed that the studies in Memphis indicate that in time the type of housing these tenants live in will be or will gradually revert to about the same types as they were forced to leave. If the houses are slightly better due to better rents having been collected to date, then the houses will be allowed to run down due to a decrease in return to the owner. This process may be referred to as slum shifting. To have slum clearance it is necessary to select tenants who are in the same income group as the displaced tenants of the demolished slum.

Out of 148 families facing the project, 117 stated recently that they would like to live in the project if they could. These people were in approximately the same economic class as the ones displaced. The remaining 31 families stated that they definitely would not want to live in the project although they live in typical slum houses and must know of all the conveniences in the project houses.

Another point of interest is that in approximately 50 per cent of the houses there has been an increase in rent averaging $2.00 a month per family. In the other half there has been no change in rent. Only 16 of the 148 houses facing the project had repairs or improvements made on them during this

two year period. In every case where improvements were made there was an increase in rents.

LAUDERDALE COURTS

In the first white project under the old PWA Housing Division program there have been several noticeable changes. Some 50 dilapidated Negro shacks were condemned and torn down because of their objectionable character and their location just across the street from one side of the new project. A new modernistic looking doctor's office was constructed across the street on another side of the project, and on the third side a new, modern grocery store was built and is doing a good business. No study was made to determine the effect of this project on the drug and other grocery stores near by, but undoubtedly they are doing more business because of the increased buying power of the neighboring population. No evidence of this increased business, however, is shown through improvements in the building structures themselves except in the two specific instances cited here.

LAMAR TERRACE

In the third project (Lamar Terrace), the first under the U. S. Housing Authority program, 299 families (practically all colored) were displaced by 633 white families. The original colored slum area formed a long narrow wedge extending into a very desirable white residential area. The presence of the colored in this area affected the surrounding property in addition to the blighting effect of the run down, dilapidated dwellings and business property.

One type of shift noted was a perfectly natural moving of the displaced colored families into a white, blighted area which extended into the main slum and colored section of the city not far from this project. There was considerable reaction to this from white families who had lived there for many years. The housing studies and map classifying the slum areas into various degrees of "slumness" indicated very definitely that this trend was inevitable but was taking place within a few days instead of over a period of years. This is an example of slum shifting in a sense, but in this case desirable and logical under the circumstances.

Another type of shift which is to be expected is the gradual replacement of a small poor class Negro business section with a new white business or residential development to serve the 633 new white families moved in.

The white families coming into the new project came from all parts of the city with none, of course, from the original area as those there were colored and not eligible for this project.

Diladipated dwellings housing 46 colored families were left at the tip end of a wedge which extended into a white residential area like a peninsula. These were left out of the area which was cleared because of the necessity of cutting down on its size. This island was too noticeable to be forgotten however. Through neighborhood agitation and with the aid of the city officials who were disappointed by the need for omitting this small area from the housing project, this area was purchased and will be converted into a park and playground. The need for a civic real-property improvement agency closely correlated with the tax delinquent department, the housing authority, and other interested agencies, with legal machinery for buying and redeveloping small isolated rotten spots is illustrated here.

CONCLUSIONS

1. There has been a decided shift in the primary objective of the old PWA Housing Division program and of the U. S. Housing Authority program from

one of ending unemployment and stimulating the building industry to one of lower rents within the paying ability of slum dwellers.

2. An effort should be made by health departments to study objectively the social and economic factors responsible for the housing problem so as to be able to formulate a comprehensive public health housing policy.

3. To develop a comprehensive housing program requires the coöperation of the agencies concerned with housing such as the city planning commission, the housing authority, social agencies, the department of health, the building department, relief agencies, the department responsible for tax delinquencies and relief agencies.

4. Vacancy ratios and demolition as a device in enforcement programs are intimately related, and a program of condemnation and demolition must be carried out according to a plan in order to get the desired results.

5. It is believed that the type of questions now confusing the broad problem of housing would gradually fade from the picture and new and more specific problems with indicated courses of procedure would come into view under a comprehensive plan of attack.

6. An attempt has been made to discuss several types of population shifts which take place when a subsidized housing project is built in slum cleared areas.

NOTE: The authors wish to acknowledge the work of Wilbert H. Grishan, Director, Division of Housing and Malaria of the Memphis Health Department, and of J. E. Moon of the same Division in directing and tabulating the field studies upon which this paper is based.

Massachusetts State Program for the Care of Prematures*

FLORENCE L. McKAY, M.D.

Assistant Director, Division of Child Hygiene, Massachusetts Department of Public Health, Boston, Mass.

A PROGRAM for the care of prematurely born infants in a state department of public health is an innovation in the activities of a division of child hygiene. The pattern for the Massachusetts program initiated in 1937 was that established for Chicago by Dr. Julius Hess and others.

HOSPITAL CENTERS FOR THE CARE OF PREMATURE INFANTS

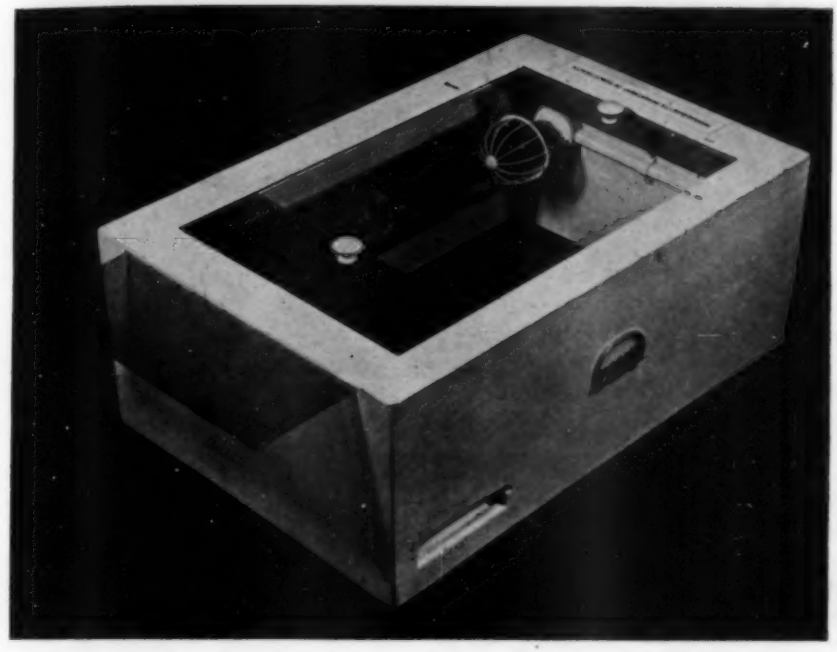
Establishment — The Massachusetts program started with the establishment of hospital centers for the care of premature infants. The basis of this program is the superiority of adequate hospital care of prematures over such care in the average home. As this was one of the many activities of the Division of Child Hygiene, the establishment of these centers extended over a considerable period and was completed in October, 1938.

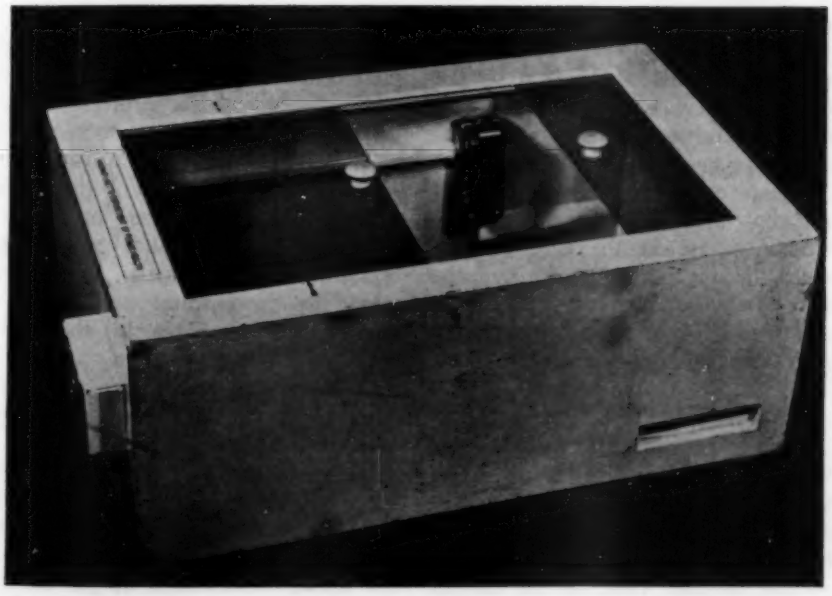
The establishment of the centers (48 outside of the City of Boston) was done through visits to the hospitals selected, during which the program was discussed with the superintendent, the obstetric and nursery supervisors, and interested members of the medical staff and hospital board. Aside from strategic geographic location, the standards of work determined the choice of hospitals. In selection we had the assistance of all state organizations concerned with hospitals. After inspection of the nursery and methods of care, the necessary changes in equipment for becoming a center were outlined to the hospital group.

Improvised Equipment—At the time of this visit an improvised incubator was demonstrated. This can be built in the hospital for less than $30. It is a bottomless wooden box which covers the infant in its crib. It is heated by a colored electric light bulb thermostatically controlled, with an open water tank for additional humidity. Covers made of non-breakable, non-inflammable cellulose acetate slide together, or separately, giving sufficiently wide openings so that all care can be given without removal of the infant. Although most hospitals use this, many have commercial incubators in addition.

A carrying basket was also demonstrated. This is made from a picnic basket lined with six layers of newspaper. The premature infant, wrapped in blankets and surrounded by hot water bottles, the heat from which is held in by an enveloping blanket, can travel safely to the hospital in such a basket. Many of the hospitals provide this basket as they are sometimes

* Read before the Maternal and Child Health Section of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 9, 1940.





TWO VIEWS OF AN IMPROVISED INCUBATOR—MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

IMPROVISED PREMATURE CARRYING BASKET—MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

called on to take a premature infant from the home to the hospital. Some use the improvised incubator as an ambulance.

Standards for Care and Equipment—The standards for hospital care and equipment of the premature infant were based upon those of the Chicago program.[1] No funds were given to the hospitals. They purchased equipment themselves and made whatever arrangements were necessary for the isolation of prematures. The division did, however, contribute an intensive 2 week refresher course in the care of premature infants conducted by the Boston Lying-in Hospital, the tuition and stipend for each hospital nursery supervisory being paid by the division.[2]

THE PREMATURE LAW

After the program was established a law was passed which allows local boards of health to provide transportation of infants weighing 5 lbs. or less who are born in the home to hospitals equipped for their care. If the parents cannot pay for hospitalization the local boards of public welfare are enabled to do so. Later on this law was revised to include payment not only for prematures born in the home but also for those born in the hospitals, so there is now no economic reason why a premature infant cannot have hospital care.

EDUCATIONAL PROGRAM

Professional—Along with the hospital center part of the program, educational activities for professional and lay groups were conducted. In coöperation with the Massachusetts Medical Society, lectures on the care of the premature infant were made available. After a hospital center was established each physician in the area served by the hospital was notified of the services available in the newly established center, given a set of printed material on the care of the premature and new-born infant and a copy of the Massachusetts premature law.

Thirteen institutes for public health nurses were held in different parts of the state. The care of the premature infant in the hospital was demonstrated by the nursery supervisors of the hospital centers; care of the premature in the home, before sending it to the hospital, was emphasized; transportation facili-

ties were discussed, and a session was devoted to the health supervision of the premature infant after it leaves the hospital.[2]

After these institutes, the state district supervisory nurses conducted follow-up group discussions of this material with the local nurses. They and the district health officers also consulted the local boards of health and arranged in many communities for carrying baskets to be made available in drug stores, fire departments, visiting nurse association offices, or any place open night and day.

Lay—A leaflet for mothers on the care of the premature was issued by the Division and this is now included in all the prenatal letters sent out from the Division and is distributed through prenatal clinics, hospitals, physicians, and nurses. The "Outline for the Conduct of Mothers' Classes" was revised to include material on the care of the premature. Radio broadcasts and newspaper publicity are a part of the educational program for the laity.

PERSONNEL

The only full-time worker on the program was a public health nursing supervisor of hospital centers trained in the care of premature infants. The Supervising Instructor in Public Health Nursing and the Assistant Director of the Division of Child Hygiene gave part time. Upon the termination of the 3 years' full-time services of the supervisor of hospital centers, supervision of the premature program was transferred to the Supervising Instructor in Public Health Nursing and the state district public health nursing supervisors.

We have been fortunate in having an Advisory Committee which has helped us with plans and with the content of our educational program. This

DEATHS OF PREMATURES IN HOSPITALS
MASSACHUSETTS, 1937–1939

PREMATURES

Year	Total Cared for in Hospitals	Deaths No.	Deaths %
1937	1831	732	40
1938	1819	689	38
1939	1957	705	36

Year	Born in Hospitals	Deaths No.	Deaths %	Transferred to Hospitals	Deaths No.	Deaths %
1937	1731	686	40	100	46	46
1938	1658	621	37	161	68	42
1939	1776	626	35	181	79	44

TABLE 1

NUMBER OF PREMATURES TRANSFERRED TO HOSPITALS FOR CARE
MASSACHUSETTS, 1937–1939

CHART 1

DEATHS FROM PREMATURITY
MASSACHUSETTS, 1934–1936, 1937–1939

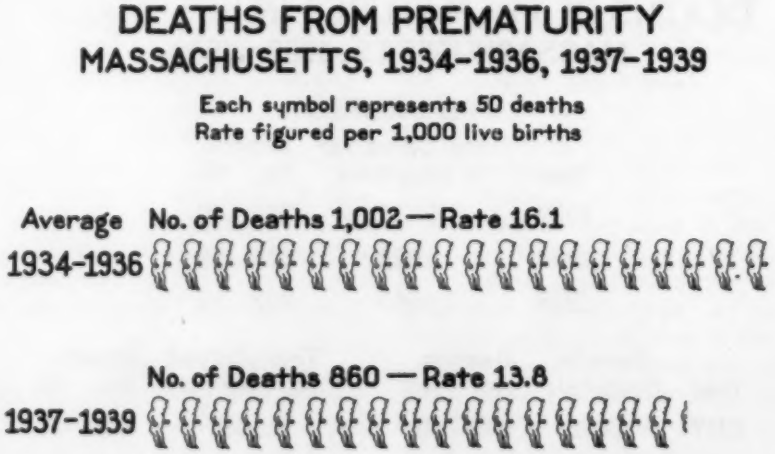

Each symbol represents 50 deaths
Rate figured per 1,000 live births
Average No. of Deaths 1,002 — Rate 16.1
1934-1936
No. of Deaths 860 — Rate 13.8
1937-1939
PREMATURE CENTERS ESTABLISHED AFTER 1936.

CHART 2

committee is comprised of a pediatrician, obstetrician, a professor of child hygiene, and an engineer who has special knowledge of air conditioning.

STUDY OF CAUSES OF DEATHS OF PREMATURES

With this committee we are now trying to introduce a study of the causes of deaths of premature infants. Our objective is not only to secure statistical material but primarily to have an evaluation of each case made by the physician who cares for the infant, followed by an analysis and suggestions by the Advisory Committee.

COÖPERATION IN OTHER STUDIES

This division is contributing to a study of diabetic pregnancies conducted by Dr. Priscilla White of the Deaconess Hospital. Dr. White [3] points out that estrogenic therapy in diabetic mothers prevents a large number of premature deliveries. It is hoped that non-diabetic mothers as well will profit by studies of this group. We are learning more and more about the relation of estrogenic substances to pregnancy. Is is possible that premature births will be prevented by endocrine and vitamin therapy, and that the time may come when our premature programs may be discarded?

PRENATAL CARE

It is unnecessary to emphasize the importance of the relation of adequate prenatal care to prematurity. A part of our program has been devoted to improving prenatal care given in Massachusetts and also to providing more centers where this care can be made available. We have prepared in mimeographed form—"Outline for the Conduct of Local Prenatal Clinics." With the coöperation of the Harvard School of Public Health, we furnish each year courses for physicians who conduct prenatal clinics. We are now offering to pay for the conduct of new prenatal clinics by physicians who have completed this course, when the community cannot afford to pay for this service. More emphasis on the establishment of new prenatal clinics is being given, especially in those hospital centers where no clinics are now available.

RESULTS

Having had at least one full calendar year of the completed program (1939), we should have statistical material from the hospitals which would give us some idea of the results. A report form is sent out annually by the Department of Public Welfare which licenses the maternity departments of the hospitals, but the returns are not altogether dependable. It is difficult for the hospitals to realize that a premature infant is defined by weight rather than by gestation. We hope in the future to have more reliable figures. Certain figures, however, have been felt to be sufficiently reliable for presentation at this time.

There has been a slight reduction in the death rates of premature infants in this 3 year period. This reduction is in the deaths of premature infants born in the hospital (40 to 35 per cent) rather than in those transferred to hospitals (46 to 44 per cent), as would be expected. There has also been a decided annual increase in the number of premature infants who have been transferred from homes to hospitals for care as can be seen in Chart 1, in which each symbol represents 10 premature infants. In 1939 there was, for example, an increase of 81 prematures transferred to the hospital.

The neonatal death rates in the United States as a whole have been falling in the past few years. Dunham has cited a decrease of 7 per cent in the neonatal death rate of the United States in the period 1935–1938.[4] It is

more than probable that any fall in the death rate from prematurity in Massachusetts is a part of this general national decrease. Thus, with the full realization that the premature program may have nothing to do with the death rates from prematurity in Massachusetts, we present the death rates of the 3 year period previous to the premature program and the death rate of the 3 year period following the beginning of the premature program in Chart 2. Each symbol represents 50 deaths, and there are about 3 fewer symbols in the 1937–1939 group. This indicates a lessening death rate—from 16.1 to 13.8. The number of live births in these two periods was approximately the same.

SUMMARY

1. Massachusetts bases its premature program on the superiority of adequate hospital care over care in the average home, and because of this has established 48 hospital centers adequately equipped to care for premature infants.

2. The nursery supervisors of these hospitals have had special training.

3. The Division of Child Hygiene gives nursing supervision service to the hospital centers.

4. An educational program for physicians, nurses, and the laity has accompanied the premature program.

5. This program emphasizes the improvement of standards and facilities for prenatal care.

6. A study of the deaths due to prematurity is being started.

7. Certain results of the program have been presented.

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Vol. 31

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AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 31, No. 1 January, 1941

THE Executive Board announces with pleasure and pride the appointment of Dr. Mazÿck P. Ravenel as Editor Emeritus of the *American Journal of Public Health* and of Dr. Harry S. Mustard as Editor.

The Executive Board announces with equal satisfaction the appointment of Dr. Henry E. Meleney as a member of the Editorial Board for the year 1940–1941. The Board will announce another appointment to the Editorial Board in the near future.

Associated with the Editorial Board and Dr. Mustard in the conduct of the *Journal* will be a group of Associate Editors among whom Arthur P. Miller and Dr. Leona Baumgartner can be mentioned at this time.

Dr. Ravenel needs no introduction to the readers of the *Journal*. He has served them for sixteen years as Editor and Editor-in-Chief. Dr. Mustard has been a member of the Editorial Board since 1938 and of the Executive Board since 1939. His official position is that of Director of the DeLamar Institute of Public Health, Columbia University. Arthur P. Miller similarily has a long history of service on Association committees, notably on the Editorial Board and as Chairman of the Committee on Fellowship and Membership and of the Committee on Eligibility. Mr. Miller is Senior Sanitary Engineer, District No. 1, U. S. Public Health Service, New York City. Although Dr. Baumgartner has had no official connection with the *Journal* up to this time, she has rendered useful service as an alternate on the Annual Meeting Program Committee and as a member of the Committee on Scientific Exhibits. She is Acting Director, Bureau of Child Hygiene, Department of Health, New York, N. Y.

Dr. Henry E. Meleney and another member to be appointed will join Dr. Reginald M. Atwater, Professor Ira V. Hiscock and Dr. Kenneth F. Maxcy to comprise the Editorial Board for the next year. The Board is entrusted by the Executive Board with the responsibility for maintaining the *American Journal of Public Health* at a high professional standard and as an instrument for reflecting general Association opinion.

The Editorial Board, the Editor Emeritus, the Editor, and the Associate Editors are qualified to serve well the many interests represented in public health work. The allegiance of none is to any one Section, but each has been selected by the Executive Board on the basis of broad knowledge in a number of fields, with special competence in one or more areas.

Vol. 31, No. 1, January, 1941, appears under this direction. There are no startling innovations, nor are any to be expected by readers as the months go on. Those responsible for the editorial policies of the *American Journal of Public Health* have it in mind only to produce a useful magazine of applied public health which with dignity and accuracy represents the American Public Health Association with its membership of 7,000 professional public health workers.

ABEL WOLMAN, DR.ENG.
Chairman, Executive Board
American Public Health Association

THE EDITOR EMERITUS

ELSEWHERE in the *Journal* appear personal tributes to a very hale and keen and scholarly Editor Emeritus. We who will attempt to carry on the work which Dr. Ravenel has so well done most heartily concur in these expressions of affection and esteem. But we want to do more than concur. We want, on our own part, to emphasize to the readers of the *Journal*, that the service they have received under Dr. Ravenel's editorship has included an element incomparably finer than anything for which a contract may call. This inestimable quality has sprung from the integrity of the man himself. He carried his own high standards over into his work, and it seems never to have occurred to him that it would have been much easier and more popular to bring these standards down than it was to lift others up. Sometimes those whose articles were under his editorial knife have groaned in anguish, but their wounds have healed cleanly; and generally they admit their literary progeny to have been benefited by the operation.

In addition to a discerning and uncompromising scholarship, Dr. Ravenel brought to bear on his work a fine scientific training and a record of unusual accomplishment. Born at Pendleton, S. C., he attended the University of the South, and received his M.D. degree at the Medical College of South Carolina in 1884, taking first honor. Later he studied in the Laboratory of Hygiene of the University of Pennsylvania as Scott Fellow in Hygiene; in the Pasteur Institute, Paris; the Institute of Hygiene, Halle a/s, Germany; and in the Institute Maragliano, Genoa, Italy. He was assistant demonstrator of anatomy in the Medical College of South Carolina in 1884, taught diseases of children, and practised medicine for six years in Charleston. He has since devoted his time to scientific work and teaching in other places.

He was the first Director of the Hygienic Laboratory of the New Jersey State Board of Health in 1895; Instructor in Bacteriology at the Medical and Veterinary Schools of the University of Pennsylvania in 1896; Bacteriologist of the Pennsylvania State Live Stock Sanitary Board in 1896–1904; Assistant Medical Director and Chief of the Laboratory of the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis in 1904–1907; Professor of Bacteriology at the University of Wisconsin in 1907–1914. From 1914 to 1931 he was Pro-

fessor of Preventive Medicine and Medical Bacteriology, and Director of the Public Health Laboratory, at the University of Missouri.

When the United States entered the World War he was commissioned Major, and later Lieutenant Colonel in the Army Medical Corps, serving at Fort Riley and Camp Funston, Kans., with the medical expedition to Roumania under Colonel (later General) McCaw. Because of the Bolshevik riots the expedition was unable to reach Roumania and was recalled. Dr. Ravenel was then ordered to Camp Kearney, Calif., where he became Camp Surgeon, serving until the end of January, 1919. In the same year he was commissioned Assistant Surgeon General in the Reserve Corps of the U. S. Public Health Service.

His special fields of research are tuberculosis and rabies. His work at the Pennsylvania State Live Stock Sanitary Board, published most completely in 1902, produced the first conclusive proof of the fact, already believed but unproved by other investigators, that the bovine tubercle bacillus was transmissible to man. In connection with these studies, he has done a large amount of work on milk, and was an advocate of pasteurization as early as 1895. Dr. Ravenel is the editor of *A Half Century of Public Health*, for which he wrote the history of the American Public Health Association. He has written numerous papers, dealing chiefly with bacteriology and public health, and chapters for Osler's *Modern Medicine*. His bibliography is carried in this issue of the *Journal*.

Since 1924, he has been Editor of the *American Journal of Public Health*. He is an honorary member of the Philadelphia Pediatric Society; and a member of the National Tuberculosis Association (President 1911–1912); American Philosophical Society; American Public Health Association (President 1920–1921); American Medical Association; International Association Against Tuberculosis; International Committee on Control of Bovine Tuberculosis; American School Hygiene Association; National Committee on Milk Standards; U. S. Live Stock Sanitary Association (President 1911–1912); and Wisconsin Anti-Tuberculosis Society (President 1908–1914). He is also a member of Sigma Xi, Phi Beta Kappa, and Delta Omega. Upon the rich resources of this background he has drawn unstintedly, to the everlasting benefit of the *Journal*, and to the profit of its contributors and readers.

This personality and these seasoned and unusual abilities are happily not to be lost to us. Dr. Ravenel has earned a lessening of the load he has been carrying for the *Journal*, and in this we must, in all fairness, acquiesce. But he will continue to stand by, on call, and will aid us in ways in which only he can serve.

To Mazÿck Porcher Ravenel, our Editor Emeritus: Sir, your very good health!

RAYMOND PEARL, 1879–1940

WHEN in 1918 Raymond Pearl became the first Professor of Biometry and Vital Statistics in the new School of Hygiene and Public Health at Baltimore, his name was almost completely unknown to the members of this Association. He was a biologist whose work had been largely in the field of genetics. He was a biometrician also, but the technics of biometry were only just beginning to be applied to the problems of medical and vital statistics, and their utility was

as yet by no means clear. The appointment was a surprise and as well a shock to the vital statisticians of the country.

The wisdom of the appointment was soon made evident. To the field of medical and vital statistics Pearl gave all the force of his unique personality, and of his great intelligence. He held up to scorn and ridicule the all too prevalent looseness of thought and of statement in current medical statistics. He insisted that his students comprehend the underlying philosophy of modern statistical procedure and master its technics.

His work had profound and permanent effect on the field of medical and vital statistics and on public health in this country. His students occupy important positions. His ideals have become the ideals of American medical and vital statistics. When his work came to an end on November 17, 1940, this Association lost a member of world-wide reputation, and his associates a beloved and honored friend.

A. W. FREEMAN

A NOTABLE PASTEURIZATION RECORD

THE action of the Provincial Legislature of Ontario in 1938 in making the pasteurization of milk compulsory has attracted wide attention. The progress of this ambitious Provincial program has been well described in a report entitled "Progress in Pasteurization in Ontario" presented before the Canadian Public Health Association by A. E. Berry, Ph.D.* of the Ontario Department of Health.

Prior to the Act of 1938 which brought all control of pasteurization in Ontario under the Department of Health, there had been permissive laws in effect, but only 50 municipalities out of a total of over 800 had made pasteurization compulsory, although in 15 others the total milk supply was pasteurized without aid of special legislation. Twelve of the 27 cities in the Province had complete pasteurization. This would seem to indicate only a moderate advance in pasteurization under local administration of a permissive nature.

After 2 years of this new legislation, it is significant to note that the 27 cities and 147 towns which automatically came under the Act have achieved complete pasteurization and, in addition, through orders-in-council, all villages of 500 population or over are now included under the Act, and many smaller communities including rural areas are benefiting from the legislation. It is officially estimated that at least 92 per cent of all milk sold in Ontario for fluid consumption is pasteurized. The number of plants under Provincial supervision is more than 800—a figure said to be double that for the remainder of the Dominion.

In addition to achieving an important advance in milk control in Ontario it is believed that this is the first area of its size in the world to make pasteurization compulsory.

According to Dr. Berry's report, this legislation in Ontario has accomplished two important advances: it has removed from local centers the controversy of deciding for or against pasteurization, a decision which formerly was made by

* To be published in *Canadian Journal of Public Health.*

bodies untrained in public health matters; and it created uniform requirements for all pasteurizing plants in the Province and put them under the supervision of the Provincial Department of Health.

It is gratifying for our colleagues in Ontario to report that even in this short interval there appears to have been a very favorable effect on the number of cases of undulant fever, which in 1939 was reduced by 45 per cent, and in the number of cases of typhoid fever, which was lowered approximately 50 per cent, the infant mortality being also reduced substantially. It is gratifying also to report that, in spite of the natural objections which have been raised to a compulsory program, there has been little public support for those whose claims oppose pasteurization. The feasibility of applying pasteurization to both large and small municipalities, urban and rural, on a Provincial basis appears to have been plainly demonstrated.

Association Seal

THE Editorial Board is indebted to Mellon Institute for permission to reproduce the Association seal as it appears on the cover of the *Journal* this month and as it will appear hereafter. This is a photograph of an aluminum medallion, one of thirteen such emblems of scientific societies which are lobby decorations in the Mellon Institute for Industrial Research in Pittsburgh. The medallion was copied from the Association seal, but improved in artistry and setting, and we are glad to acknowledge the debt to the Mellon Institute for this artistic service.

Credit Lines

A Selective Digest of Diversified Health Interests

D. B. Armstrong, M.D., and John Lentz, M.S.

"Thank You" Note

Among the fears that beset the editors of this section before "Credit Lines" made its first appearance last September was the probability that there might be a scarcity of material. Consequently, an appeal was made to readers to send us booklets, posters, reports, and other health education material for review and comment. The response was not encouraging at first, but as the weeks went by all types of material began to flood our desk. And thus we found ourselves in a predicament. Almost without exception the material submitted was worthy of mention—there was almost no chaff among the grain. With so much at our disposal, it soon became evident that we could not hope to review all the excellent items that reached us. Therefore, to the readers who have sent in material that has not yet been reviewed—our apologies and our thanks. The cooperation that we have received from so many sources has made our editorial chair an easy one. It is hardly necessary to add that continued contributions will be welcomed and referred to in this section in so far as space permits.

Some Notable Health Publications of 1940

Before the 1941 tide of health education media begins to sweep in, there are certain items produced during the past year that should be mentioned in these columns. In the space available, we can do no more than list these materials and comment briefly upon them. We suggest that you check this list for items which you may not have seen.

1. The Food and National Defense Issue of *Consumer's Guide* (published September, 1940, by the Department of Agriculture, Washington, D. C. Available from the Superintendent of Documents, Washington, D. C., at 5 cents a copy). This impressive publication was designed to show how the life of our democracy and its continued preservation are inseparably linked with the science of nutrition. The theme of this issue—Making America Strong by Making Americans Stronger—is dramatized by superb photographs that in themselves tell a convincing story. The brief text is a rare combination of informative data coupled with certain passages that could easily pass for poetry—poetry reminiscent of some of Carl Sandburg's work. This publication is recommended to health educators for its effective photographs and text as well as for its general makeup.

2. *The Health Examination* (published by the Community Service Society, 105 East 22nd Street, New York, N. Y. Two issues available, one for men and one for women). These booklets make clear the value of the health examination by interpreting the various tests and procedures carried out by the physician and the nurse during

Please address samples of printed material, comments, or other editorial contributions to the editors at One Madison Avenue, New York, N. Y.

the course of a thorough physical examination. These publications were prepared primarily as teaching implements for public health nurses, but much of the material in each booklet could be used to advantage in campaigns designed to acquaint the public with the importance of annual health examinations. The booklets are especially noteworthy on two counts: (a) The full text of each is made up of quotations from noted medical and health authorities (a novel idea). (b) The photographs were especially posed to enable the reader to follow step by step the many procedures which the examinee undergoes. A word of criticism about these booklets—the pages are numbered in Roman numerals. In citing page references, etc., we find that the Roman system of numbering is always cumbersome and, to many people, confusing.

3. *Respirators—Locations and Owners*

The Use of the Respirator in Poliomyelitis by James L. Wilson, M.D. (Published and distributed by the National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York, N. Y. Furnished on request.)

The first of these booklets lists by state and city the owners of respirators throughout the United States. The information provided should be especially helpful to health authorities during epidemics of infantile paralysis. The second of these booklets was published to promote the proper use of the "iron lung" and other machines designed to provide respiration by mechanical means over prolonged periods of time. We suggest that copies of both be secured for every health department library.

4. The Group Talk Series (published monthly by the Public Relations Bureau of the Medical Society of the State of New York, 292 Madison Avenue, New York, N. Y.). These "talks" are issued for the lay person who may be invited to address club groups, civic organizations, and other gatherings on health subjects. The "talks" are excellently written and contain much sound and fundamental information on a wide variety of health and medical topics.

5. *Your Health Center*

Six Years of Progress in Public Health (1934–1939)

(Published by the Department of Health of the City of New York.) The booklet entitled *Your Health Center* is an extremely attractive publication which was designed to create a better understanding of the health services offered by New York's district health centers. It possesses originality and freshness and conveys its message with an economy of words. Especially attractive features are the photographs, the typography, and such intriguing section titles as: Health for the Millions, The Advance Guard, Tomorrow's Grownups, Seeking Our Microscopic Enemies, etc. *Six Years of Progress in Public Health* relates the story of an unusually active and progressive period in the history of New York City's Department of Health. Within the space of 31 pages a cross-section of the manifold activities of our largest metropolitan health service is unfolded. This booklet should be reviewed by all health workers charged with the compilation of annual reports.

GOING—GOING—ALMOST GONE!

Is diphtheria vanishing? Not everywhere, of course, and no doubt not completely for a long time. But the indications of a substantial trend in this direction are evidenced by the current experience of many communities. Notable among such manifestations is the record of the New York State population outside of New York City (incidentally, the City rate is almost as good). Among the population of Upstate New York (approximately six million), where the first intensive state-wide diphtheria control demon-

stration was initiated in 1926, there were, in 1925, 338 deaths from diphtheria, with a death rate of 6.4 per 100,000. In 1939, during the first 9 months of the year, there were 8 deaths, and the rate for the year was 0.016 per 100,000. During the first 9 months of 1940 there were only 3 deaths, which certainly indicates that the rate for the year 1940 will have to be figured in several decimals, out toward the vanishing point!

SMALLPOX DISPATCH

Dr. William P. Shepard of California calls our attention to some very interesting data with reference to smallpox incidence in the seven Pacific Coast and Mountain states (California, Colorado, Idaho, Montana, Oregon, Utah, and Washington). He points out that in these seven states in 1939 there were 1,530 cases of smallpox reported, with a case rate per 100,000 ranging from 3.1 in Utah to 29.1 in Colorado. The 1940 experience is in marked contrast, the first 9 months of the year showing a total of only 152 cases, with case rates ranging from 0 in Colorado to 2.3 in Oregon. It would appear that a high incidence of the disease stimulates education and promotes widespread vaccination, which in turn is followed by protection against the disease for a subsequent period. It is further reported that most of these cases, outside of California, occurred in lumber or mining camps in rural areas, where health education is difficult to carry out and from which the disease is brought to urban centers.

J.A.M.A. ARTICLES

Health educators who do not regularly read the *Journal of the American Medical Association* may have missed two important papers that recently appeared therein. If you failed to read "Health Information, Please," by Homer N. Calver (October 12, 1940, issue of the *J.A.M.A.*), and a paper entitled "The Significance of the Tonsils in the Development of the Child," by Albert D. Kaiser, M.D. (October 5, 1940, issue of the *J.A.M.A.*), you will be rewarded by doing so. Mr. Calver's interesting article contains illuminating data on the much discussed and as yet little understood subject of health exhibits. Dr. Kaiser's exhaustive study discloses many points of interest concerning tonsils and tonsillectomies. One of the conclusions which he reaches is that "Tonsils are not as great a menace to a child as has been frequently suggested." This article should be of especial interest to school health authorities.

NOTED AND QUOTED

The following quotations were noted by the editors while reading various journals. So much wisdom—so much food for thought—is packed into these quotations that we felt it might be profitable to pass them on to our readers. If you have some favorite quotations of your own, send them along for publication. Please give the sources of any quotations contributed for use in "Credit Lines."

"A *health problem* (in a school child) challenges the physician and nurse for solution. A *defect* challenges no one but the statistician."

Dr. George M. Wheatley, New York City Department of Health, in a paper entitled "The School Physician in the Public Health Program." (*New York State Journal of Medicine*, October, 1940.)

"Pregnancy is good for syphilis, but syphilis is not good for pregnancy."

Joseph Earl Moore, M.D., Johns Hopkins University Medical School, in the publication *The Diagnosis of Syphilis by the General Practitioner*. U. S. Government Printing Office, 1938.

"Tuberculosis clinics are listening posts in the offensive campaign which will reduce the great white plague to guerilla status."

Ohio Health News

"In the battle of life with disease those who die are but a fraction of those who suffer wounds or are maimed."

Sir Arthur Newsholme

"It seems to me that a federal plan of compulsion in a country of so divergent characteristics as our own, is beyond human power to administer."

Dr. Kendall Emerson of the National Tuberculosis Association, in a paper entitled "Responsibility of Organized Medicine in Medical Care." (*American Journal of Public Health*, October, 1940.)

"The discovery of popular education as an instrument in preventive medicine, made by the pioneers in the tuberculosis movement, has proved almost as far-reaching in its results as the discovery of the germ theory of disease thirty years ago."

Professor C.-E. A. Winslow, Yale University

BOOKS AND REPORTS

Public Health Administration in the United States—*By Wilson G. Smillie, M.D. (2nd ed.) Macmillan,* 1940. 553 pp. Price, $3.75.

Dr. Smillie's book *Public Health Administration* met a need in this subject. His volume has become the standard text, both for study and for reference. It is seldom that a book on a subject which is so difficult and so diffuse immediately meets with such hearty approval of students of the subject. Now we have a second edition—enlarged, revised, improved, and brought up to date. The high standards are maintained. The text is readable and notable for its clarity and precision. If there is any comment that can be made, it would be that one would like to have a fuller discussion of many of the subjects. On the other hand, the author was necessarily limited in order to keep the work within the reasonable bounds of a textbook.

This second edition includes discussions of certain aspects of public health administration which have assumed importance during the past five years. Among these are the Social Security Act, the National Health Program, and the place of the health department in relation to hospital and sickness insurance.

The treatment of administrative features of communicable disease control has been revised to incorporate the recent developments in epidemiology. The section on tuberculosis and syphilis has been revised, while new sections have been added for such subjects as epidemic encephalitis, tularemia, and trichinosis. Nutritional deficiencies and their control are discussed in the light of present-day knowledge.

New photographs and line drawings add to the value of this new edition.

When the first edition appeared, public health was in the developmental stage in the United States. No one could have foreseen the rapid growth and expansion of public health administration that was about to occur. These developments have not been of a revolutionary nature, for the basic principles have remained unchanged, but the work has become more effective. Increased knowledge of the epidemiology of diseases has made it possible to carry out more precise measures. Smillie properly emphasizes our greatly increased knowledge concerning the importance of nutrition to individual and community welfare. It is increasingly clear that the extraordinary change that has occurred during the past few years has been the growth of public interest in national health and welfare. It also now becomes clear that the nation was ready for this expansion. The gains have been consolidated and it is a satisfaction to anticipate what may unfold in the immediate future. Smillie emphasizes the fact that the field of the health administrator is expanding; more and more responsibility is being placed on his shoulders. The pages we are reviewing are bound to be of assistance to students of all phases of public health, to medical students, to students of government, to social and welfare workers, public health nurses, sanitarians, and all those engaged in welfare activities.

The book is well made, the illustrations are well chosen, and it is destined to remain the outstanding volume on the subject.

M. J. ROSENAU

The Public Health Nurse and Her Patient—*By Ruth Gilbert. New York: Commonwealth Fund,* 1940. 396 pp. Price, $2.25.

Here is an epochal book, marking a long step forward in the development of nursing—a book of incalculable value which implements our intuitive efforts to shape our service to the personal needs of the individual patient with the tool of understanding.

For a decade or two nurses have been reading the growing literature of psychology and psychiatry. Appreciation of the controlling rôle of emotions and their inseparability from organic reactions has grown. In one aspect after another of nursing, as, for example, in the care of the sick, of maternity patients, and in child health work, our recognition of the great significance of psychological phenomena has been growing sharper, accompanied by increasingly thoughtful examination of nursing purposes and procedures. This period of ferment, of groping, of growing insight, of critical evaluation, of trial of new methods, has at last crystallized to the point where a book can be written about the importance of the human equation in nursing and the meaning of attitudes and relationships in sickness and in health as they effect nursing practice.

This Miss Gilbert has done with brilliance. At last we have a book on the art of public health nursing—the art of helping persons to cope with both the physical and emotional strains associated with their illness, and to desire health enough to make the effort to have it. Miss Gilbert's interpretation of emotional stresses and of the ways in which nurses may meet them are based on sound psychological principles. She is a trained psychiatric social worker as well as a nurse. Certainly there is nothing dogmatic about her treatment of her subject. Nor is it any the less sound and penetrating because free from obscure technical terminology. The content is readily apprehended, convincing, and usable because it is so completely pertinent, based as it is on situations which are thoroughly familiar to nurses—situations with which they are working daily.

This is a book that should be read and reread, and marked and pondered over and turned to again and again. No nurse, whatever her field of work, can afford to be without it, and we venture to suggest that health officers and their medical staff could learn much of value from its perusal.

It is a book which can be read with pleasure as well as with rich reward, so clear and delightful is Miss Gilbert's style. She has the rare gift of making an abstruse subject come alive in terms we can readily understand and put to use, and this without the distortion of oversimplification.

ELIZABETH G. FOX

The Rockefeller Foundation, International Health Division, Annual Report, 1939. *New York: The Rockefeller Foundation,* 1940. 230 pp.

This review of outstanding progress in the investigation of specific diseases, of aid given to state and local health services, and of the support of professional education is a scientific publication of unusual interest. Carefully prepared, and including appropriate illustrations and useful reading references to scientific articles of staff members, the report contains an enormous amount of valuable information regarding the status of virus studies and of measures for the control of yellow fever, certain respiratory diseases, tuberculosis, syphilis, rabies, hookworm, schistosomiasis, malaria, and mental diseases.

During 1939 assistance was given to public health work in 37 countries. Malaria work was carried on in India, Egypt, Portugal, Greece, Cyprus, Italy, Albania, British Guiana, Brazil, Sal-

vador, Panama, Costa Rica, Cuba, and Mexico. Increased attention was given to syphilis and rabies, while yellow fever, influenza, and scarlet fever were "subject to major attack." Large-scale measures for human immunization against yellow fever were conducted. A low temperature cabinet for the preservation of viruses which operates at a mean temperature of −76° C. and new animal isolation quarters were developed and constructed. It is recommended that persons who expect to travel or reside in a region in which exposure to yellow fever is possible should be vaccinated against the disease.

An epidemiological method of study has been applied in the Eastern Health District of Baltimore to the problems of mental hygiene. Effort is directed toward: (1) determining the prevalence of mental disease, mental defects, and dysfunctions in an urban population; (2) discovering the economic, social, racial, and personal factors underlying these conditions; and (3) devising and putting into operation, as an integral part of the health services of the community, procedures designed to bring about effective management and prevention.

This volume contains a stimulating digest of reports of extensive laboratory, field, and administrative research, and of educational activities. One must read the report to appreciate the scope and significance of the services rendered.

IRA V. HISCOCK

Mind Explorers—*By John K. Winkler and Walter Bromberg, M.D. New York: Reynal & Hitchcock*, 1939. 378 pp. Price, $3.00.

Men Against Madness—*By Lowell S. Selling, M.D. New York: Greenberg*, 1940. 342 pp. Price, $3.50.

These books reflect a growing interest in the historical backgrounds of mental disease. As their titles indicate, both are based on the biographical method, although they differ widely in content, interpretation, and quality.

Mind Explorers is the product of a collaborative effort between a psychiatrist, who has already written an excellent history of psychotherapy, and a popular biographer. It deals with outstanding experimenters during the past 150 years, from Franz Gall to Sigmund Freud. *Men Against Madness*, written by the director of the Psychopathic Clinic in the Detroit Recorder's Office, is somewhat more ambitious in historical scope, going back to the supposed treatment of mental disease among prehistoric cavemen 60,000 years ago. Winkler and Bromberg's book is concerned mainly with the contributions of psychologists to our knowledge of mental phenomena; Dr. Selling places major emphasis on the neurologists and physiologists.

In both books the selection and presentation of material follow highly arbitrary and sometimes confusing patterns. Advertised on its jacket as "the story of mental healing, told through the lives of its more significant practitioners," the bulk of *Mind Explorers* is actually devoted to psychological theorists and experimenters who never practised mental medicine. Furthermore, the book tends to over-stress the contributions of Americans to the neglect of certain eminent Europeans. The work of William James, G. Stanley Hall, James M. Cattell, and other American psychologists is described at length, while Europeans such as Wundt, Herbart, Fechner, Kretschmer, and Pearson are either mentioned briefly or not at all. Many pages are given to John B. Watson and behaviorism, while only passing mention is made of the more important Pavlov and reflexology. Notwithstanding such inconsistencies, however, *Mind Explorers* is on the whole a well written and informative book. The chapters on Gall, Mesner, William James, and G. Stanley Hall are particularly well done,

and should prove absorbing to the specialist and general reader alike.

Written in a popular style, Dr. Selling's *Men Against Madness* begins with a survey of treatment in ancient times, proceeds with biographical sketches of medieval and Renaissance contributors to the study of mental disorder, and concludes with chapters tracing the two main approaches to modern psychiatry: the organic and the functional. Much of the material in the book, particularly in the first half, deals with men, events and theories extremely remote from the general subject of mental disease, or "madness," as the author prefers to call it. The soundest and most interesting sections are those tracing the neurophysiological threads of the tapestry, through such figures as Gall, Bell, Bernard, Magendie and Hughlings Jackson. Other aspects of psychiatry, such as the contributions of the psychoanalytic school, are less happily handled. Dr. Selling's flair for sensational phrases leads him to regrettable characterizations of personalities, as well as to sweeping generalizations of dubious validity. The book is also marred by lengthy discursions, some questionable interpretations, and a frequent occurrence of minor but irritating errors of fact.

ALBERT DEUTSCH

Medicolegal and Industrial Toxicology, Criminal Investigation, Occupational Diseases—*By Henry J. Eilmann, Ph.D. Philadelphia: Blakiston,* 1940. 324 pp. Price, $3.00.

This text is by the director of a physicians' laboratory service, Toledo, with prior experience in a dye and chemical company during the World War. Contents, in addition to a brief preface and a brief and very incomplete index: 1. Poisons and drugs (pp. 1–178); 2. Criminal investigations (pp. 179–206); 3. Medicolegal examinations of miscellaneous nature (207–282); 4. Industrial poisoning (283–299); 5. Occupational diseases (301–322). The author refers to rendering expert testimony on numerous occasions as a bacteriologist, serologist, toxicologist, and haematologist. This has required painstaking search of scattered literature, much of which is here condensed without source citations. He has personally performed every test mentioned. Acknowledgment is made of the assistance of a prominent surgeon who specializes in ear, nose, and throat.

The subjects treated are fairly logically arranged, but with disproportional space to some — anthrax, glanders, tularemia, and Weil's disease as occupational diseases, and far too little to others—industrial poisons, in which methyl alcohol receives undue prominence, and the great class of aliphatic and aromatic poisons, almost nothing.

The discussions of atmospheric air, asphyxiations, food poisoning, and some of the commoner metallic poisons (arsenic, lead, mercury) are fairly complete but contain errors, according to accepted experience and standards. "Pneumonoconiosis" overlooks the acute or rapid form. Only dermatitis is discussed under occupational chemical agents. The best features pertain to various tests, criminal investigations, and medicolegal examinations which, however, are too brief.

EMERY R. HAYHURST

Graphic Presentation—*By Willard C. Brinton. New York: Brinton Associates,* 1939. 512 pp. Price, $5.00.

This book is a contribution from the engineering profession, but written for general use by those interested in graphic methods. The first part of the volume deals with How To Read a Chart, while later sections give suggestions for making a chart. An abundance of illustrations, selected from many sources, adds interest to the subject matter, as well as showing representative types of graphic charts. Useful

material is presented on the selection of paper, use of the camera, and use of color.

"Three things in combination are necessary before visual methods of presentation can be adequately used:

"(1) Accurate factual data readily available
"(2) Competent drafting talent to chart the data on a standardized basis
"(3) Equipment and organization for reproducing the charted data at a cost not too high compared to the printed word."

IRA V. HISCOCK

Sex in Marriage—*By Ernest R. Groves and Gladys Hoagland Groves. New York: Emerson,* 1940. 250 pp. Price, $2.00.

The Groveses have given us a readable streamlined book which they call "Sex in Marriage." It is sound, up-to-date, and reflects their wide experience and careful study of the subject throughout the years. Although the book is written for the newly married, those about to be married and those having marital difficulty because of sex maladjustment, nevertheless the text runs through the entire Freudian spectrum beginning at infancy, then childhood, through puberty, adolescence, courtship, marriage, the first night, and on the climacteric and the decline. The book aims to give "briefly and clearly information which an experience of twenty years in dealing with family problems has led the authors to think most useful in helping young people meet the sex demands in marriage." The authors are right in thinking that this should be useful in making young people meet the sex demands of marriage. As the title suggests, *Sex in Marriage* is concerned only with the common and normal problems of marriage. It is not a general treatment of sex; it puts no stress upon sex pathology, and has nothing of interest for those who turn to it to stimulate morbid curiosity. It is a straightforward attempt to give sex information of value to those entering marriage, in the manner and the spirit of a book for beginners in gardening, housekeeping, or child nurture.

The influence of childhood upon adult or sex life is emphasized, but the authors keep to their chosen path, namely, the giving of practical help to those who are making sex adjustments of marriage. The subject is approached objectively, treated frankly, but never descends from its high level. Both sides of controversial subjects are considered. The book will serve a useful purpose to prevent difficulties, and even disaster, for those who contemplate marriage as well as those who are in the toils. It may unhesitatingly be recommended by doctors, social workers, the clergy, parents, and others before whom these problems constantly arise.

M. J. ROSENAU

Children in a Democracy—*General Report Adopted by the White House Conference on Children in a Democracy, January 19, 1940. Washington: Superintendent of Documents,* 1940. 86 pp. Price, $.20.

This report of the fourth decennial White House Conference represents the group judgment of its 676 members, 27 of whom served 9 months on the report committee. There were no minority reports even though highly important subjects, often controversial in nature, are dealt with by representatives of different professions and interests affecting the welfare of children, including medicine, public health, education, social service, child guidance, religion, public administration, agriculture, and general civic interests.

This report is recommended as a brief, concise and exceptionally useful summarization of the most urgent present-day problems in the conservation of child health and welfare. The 98 recommendations made will serve as

an excellent guide toward the proper planning for the coming generations of children in our Democracy. Every health worker will do well to study this report carefully as an aid toward planning the local public health program.

ROY NORTON

Manual of Industrial Health Hazards—*By Joseph B. Ficklen. West Hartford, Conn.: Service to Industry,* 1940. 176 pp. Price, $4.00.

According to the sub-title the work comprises, "Occurrence and uses, the properties, clinical symptomatology, permissible standards, physiological responses, and methods for the evaluation of over ninety noxious vapors, gases and dusts." It was compiled and copyrighted by the author who is chemical engineer of The Travelers Insurance Company. A chart shows potential health hazards occurring in 108 manufacturing classifications.

The book is the outgrowth of several years of active work in the field covered by the title, and aims to present methods in a concise and simple manner for the evaluation of industrial hygiene exposures to many dusts, vapors and gases. Acknowledgment is made for drawing upon such literature as the author has considered most appropriate.

Chapter I gives certain principles for making tests of air components and contaminants, and a description of simple sampling apparatus. The succeeding chapters are devoted to various chemicals or groups of materials arranged in alphabetical order (from "Acetaldehyde" to "Zinc"). The plentiful references occur as footnotes, while an Appendix contains useful measurement data, formulae, and instructions for standard reagents. There are 13 figures some in color.

This is a reliable guide by an experienced authority who has covered the essentials for many poisonous substances and, in a way, is an extension of a plan undertaken by the Sub-committee on Chemical Procedures of the Committee on Standard Methods for the Examination of the Air, which reports in the *Year Book* (APHA), with inclusion of additional material. It has evidently required extensive and patient endeavor and, as characterizes good engineering expositions, is brief and to the point.

EMERY R. HAYHURST

Principles of Psychiatric Nursing—*By Madelene Elliott Ingram, R.N. Philadelphia: Saunders,* 1939. 428 pp. Price, $2.75.

The teaching of psychiatry has been widely extended and improved in the medical schools in recent years, and psychiatric contributions to the general medical literature are increasingly in evidence. The leaven of psychiatric education has been similarly at work in the better nursing schools, where courses in this subject are forming a part of the regular curriculum with growing frequency, and of late we have seen a multiplication of psychiatric and mental hygiene texts for the special use of the nursing profession.

The book under review has been prepared for the undergraduate student interested in the nursing of the mentally ill. The fact that it has been written by a nursing instructor in one of the country's outstanding private mental hospitals, with a foreword by its medical superintendent, would alone vouch for its value were it not for the intrinsic merits of the book as a perusal will quickly show. It is essentially a "shop-talk" survey of mental nursing, covering every phase of nursing care of the mentally sick patient, from his admission to the hospital, through the various treatment procedures and the minutiae of supervision, to the requirements for his discharge. The needs of the individual patient are emphasized throughout.

The complications and problems and exigencies of mental nursing will come somewhat as a surprise to the uninitiated whose conceptions of the care of the mentally ill are still on the old custodial level. A well trained mental nurse must know all that the general nurse knows and infinitely more besides. In contrasting treatments of the physically ill with treatments of the mentally ill, the author makes some interesting observations on standardized procedures in general hospital nursing, adopted for the sake of efficiency, and the danger of their becoming "a wholly mechanized performance," devoid of personal feeling for the individual patient. "Treatments," she says, "tend to be formulated in procedures; procedures soon are accepted and taught as techniques. . . . Unfortunately, such robot efficiency insidiously comes to symbolize nursing in the minds of many young women. Should you be one who has developed the belief that technical perfection in procedures is the main factor in nursing, you immediately will be dismayed by the lack of 'things to do' when you have your first experience in caring for those who are mentally ill." She then goes on to enumerate the many "things to do" that confront the mental nurse who properly conceives her work and responsibilities. She soon learns in a well conducted mental hospital.

Unfortunately, there are still too many mental hospitals in which most of the patients receive little if any individual treatment, where they are cared for by untrained and underpaid attendants, and where the graduate nurse is an exception. Until the governing authorities make it economically possible for the state hospitals to employ more trained nurses, such instruction in competent nursing care of the mentally sick as taught in this excellent work remains, to a large extent, a counsel of perfection. Nevertheless, the good work of education in mental nursing must continue, in the hope that a well prepared nursing profession in this most difficult of all fields of nursing will before long find our mental hospitals ready to engage it.

PAUL O. KOMORA

Marriage—*By William Lyon Phelps. New York: Dutton,* 1940. 56 pp. Price, $1.00.

This book should be required reading for all devotees of that most searching test of mental hygiene, the art and practice of marriage. I would rather know that a psychiatrist accepts and lives in fact the sweet philosophy this scholarly Christian proposes, and himself observes, than to be assured he had been psychoanalyzed and completed his institutional residence.

HAVEN EMERSON

Chemistry and Medicine: Papers Presented at the Fiftieth Anniversary of the Founding of the Medical School of the University of Minnesota—*Edited by Maurice B. Visscher. Minneapolis: University of Minnesota Press,* 1940. 296 pp., ill. Price, $4.50.

The volume is made up of a series of 14 lectures, each given by a specialist in his particular field. The contents are divided into 4 parts: Part I, Progress in the Application of Physical Chemistry to Medicine; Part II, Some Recent Investigations in Metabolism; Part III, Some Aspects of Immunity and Chemotherapy; Part IV, Some Approaches to the Nervous Control of the Organism. Many of the chapters will be of interest primarily to scientific investigators, others to those directly concerned with the application of chemical knowledge to medicine. Osmotic Work in Living Systems should be particularly interesting to those investigating the absorption of materials from the gastrointestinal tract. Concentration by the Kidney, is a concise resumé of the physiology of the kidney in health and

disease. Organic Chemistry and Vitamin Research is concerned more with the method of approach than the details of the recent organic chemistry of the vitamins. The lectures on Fats in the Diet, Heparin and Thrombosis, Action of Sulfanilamide and its Derivatives, and Chemistry in Urinary Antisepsis, will be of interest to physicians who seriously consider the scientific aspects of their profession.

The title of the book, "Chemistry and Medicine" seems rather unfortunate as this so often implies the application of chemical information to the practice of medicine, that many who purchase the book might assume that it was a comprehensive treatise rather than lectures on a few special subjects. If the scope of the book is realized, it becomes very useful to those whose particular interest may be along the lines indicated by the contents.

W. G. KARR

The Public Welfare Administrator—*By Elwood Street. New York: McGraw-Hill,* 1940. 422 pp. Price, $4.00.

Based on years of experience by the author in public and private agencies, the material in this book deals with the things that the administrator "ought to know to do his job well, and it describes that job in terms of its responsibilities, opportunities, extent, and limitations." Following a brief discussion of the development of public welfare administration, problems of organization, personnel procedure, records, and local administration are among those considered in the 23 chapters, while an appendix gives suggestions for using the book as teaching material together with a helpful bibliography. Many illustrations of typical forms are given. Another valuable feature is a list of references for further reading and stimulating questions likely to face the administrator, given at the end of each chapter.

This is not only a useful manual or text for administrators of social work, staff members of organizations, teachers and students of social work, but it should be found a practical reference book for public health administrators in view of the interrelationships of health and welfare work.

IRA V. HISCOCK

First Aid to Injured and Sick—*By J. F. Sutherland, revised and rewritten by Holliday Sutherland (42nd ed.). Philadelphia: Peter Reilly Co.,* 1940. 77 pp. (vest pocket size), 46 diagrams and manikin in colors. Price, $.25.

A compact manual covering bones and skeleton, fractures, dislocations, blood circulation, hemorrhage, wounds, antiseptics, bandages and slings, digestion, nervous system, unconsciousness, shock and collapse, respiration, asphyxia, choking, drowning, artificial respiration, foreign bodies, burns and scalds, electricity accidents, poisons, air raid gases, and transport. Rather small print, well illustrated, and subject matter well organized. First published in 1887. Meant to be carried in the pocket or handbag.

EMERY R. HAYHURST

Helping Adults to Learn: The Library in Action—*Edited by John Chancellor. Chicago: American Library Association,* 1939. 296 pp. Price, $3.00.

This book deals specifically with library procedure and would therefore be of only general interest to public health education workers and publicity experts were it not for a section by William S. Learned, reprinted from an earlier work by him. This is the chapter "A Community Intelligence Service," which first appeared in 1924 in the book *American Public Library and the Diffusion of Knowledge.* The author describes a possible community

service of experts in various fields of knowledge who would make available to the public a great range of useful information which "lies smothered and useless so far as the great majority of the population are concerned." Hundreds of agencies, including health organizations turn out information "suited to the varying needs of various types of individuals, and in some cases bearing on the fundamental requirements of all individuals."

The idea is one which should appeal to health organizations which publish so much material useful to the general public and not always widely distributed. If any community has already started such a service the local organizations would do well to back it and if one has not been started it could be one of the efforts of the public relations department to inaugurate it.

ISABEL TOWNER

Influence of a Public Health Program on a Rural Community—*By W. Frank Walker, Dr.P.H., and Carolina Randolph. New York: Commonwealth Fund,* 1940. 106 pp. Price, $.25.

"A full-time public health program was started in 1924 to demonstrate to the people of the county that it is worth while to appropriate public funds for a comprehensive public health service." So, in the third review of the public health program of Rutherford County, Tenn., is stated the basic purpose of a coöperative enterprise established more than 15 years ago between the Commonwealth Fund and the Tennessee State Health Department. Financed in the demonstration years by liberal appropriations from the Fund, with relatively smaller appropriations from state and local agencies, the basic program has now been taken over in large part by government, with the Fund's contribution confined essentially to special and collateral services. In 1924 the total budget was $30,799 of which $24,769 came through the Fund's support; whereas, in 1938 with a total budget of $34,155 only $3,630 was derived from the Fund, and this was for collateral services.

It is of interest that only 5 years were required to effect the take-over of principal services by the county government, for starting with a county appropriation of approximately $3,500 in 1924, there was a steady increase in local funds until in 1929 the local government was appropriating $27,600, and this is a county of but little more than 32,000 population.

Thus was the basic purpose of the coöperative enterprise realized. In essence the principle which the experience demonstrated was that the value of an adequate public health service could be proved within a maximum period of 5 years by the provision of such a service in the beginning. Incidentally, experience in the Province of Quebec, Canada, has since confirmed the principle in an entirely different social and economic setting. Rutherford was not the least difficult field which might have been selected for the trial. On the contrary, it is a fairly typical southern county with a per capita tax aggregate somewhat below that in many other sections of the country.

In the light of this demonstrated acceptance by the people themselves, the cold objective evidence afforded by analysis of service and vital statistics pale into relative insignificance, but such evidence there is, as the authors have well shown. Moreover, achievement of the basic purpose so fixes attention on a fundamental principle of public health administration that the lesser purposes and accomplishments may not receive the consideration to which they are in reality entitled.

No one local health service in Tennessee has made a larger contribution to the principles of public health practices, the training of personnel, and the

specificity of public health administration, than has that for Rutherford County. This reviewer knows from personal observation and experience how the area has been used as an experimental and proving ground and as a field training facility for public health workers.

Taken as a whole, this and the two preceding publications, the first by Dr. H. S. Mustard, director during the demonstration years, and the second by the present writers, constitute a series of reviews of great interest to students of modern public health administration as applied in local areas and as related to both federal and state administrative policy. E. L. BISHOP

Veterinary Bacteriology—*By I. A. Merchant, D.V.M. Ames, Ia.: Iowa State College Press,* 1940. 628 pp. Price, $7.00.

This textbook is designed as an introduction to bacteriology for students in veterinary medicine. Primarily it treats of organisms causing disease in animals, but considers also some strictly human pathogenic organisms, such as the germ of typhoid fever, since they have significance to veterinarians in the supervision of food products, such as milk, for example. It begins with a good discussion of the biology of microorganisms, including the morphology, physiology, methods of culture, and general laboratory technic. Classification and nomenclature are in accord with the fifth edition of *Bergey's Manual of Determinative Bacteriology*. Slightly more than a third of the book is given to these subjects, while approximately two-thirds is devoted to a description of characteristics of pathogenic bacteria and their effects on the lower animals especially. Sixty pages are devoted to viruses and virus diseases. There is a good index.

The book impresses us as being better than the average. The author has carried out well the plan outlined in the Preface. There is sufficient history to hold the interest of the student. The application of our knowledge of infection and immunity is not lost sight of, and enough is given on toxins and antitoxins, as well as the production of the various sera, to give beginning students a fair idea of methods.

The printing and make-up of the book are excellent, the illustrations good, and not too abundant. The information given is up to date and correct. It can be recommended without hesitation, bearing in mind the limitation set by the author in the Preface.

MAZŸCK P. RAVENEL

An Anatomical Analysis of Sports—*By Gertrude Hawley. New York: Barnes,* 1940. 191 pp. Price, $3.00.

This text largely presupposes that the reader has a definite knowledge of muscular and skeletal anatomy. With this knowledge as a base, it discusses the kinesiology involved in the various acts and technics of sports—such as archery, basketball, equitation, fencing, swimming, tennis, etc.

This is valuable information. The actions and effects of the muscular movements involved in the different sports should be better understood, especially among those instructors in physical education, trained during the last 15 years or so, who have been inoculated with the idea that "play" is the whole of physical education. Some of these instructors are of little benefit to the health and physique building of their pupils.

Special teachers in physical education and teachers and coaches of sports might well study the content of this text. CHARLES H. KEENE

How to Work with People—*By Sumner Harwood. Cambridge, Mass.: Cambridge Analytical Services,* 1940. 197 pp. Price, $2.50.

Democracy at its crossroads requires

the coöperative endeavors of every one of its units. Manifestoes issued without the consent of the governed do not form a part of its program.

Sumner Harwood has given a very clear-cut picture of the incentives, costs, and gains of effective coöperation. Emphasizing the importance of mutual understanding, he tells without attempted over-simplification, of the specific factors comprising a coöperative agreement. The incentives for working together are balanced against the obligations and coercive forces. A section on the responsibilities of the executive in the coöperative group indicates a formula for his successful participation.

The apparent criticism is that the personal traits of executives and coworkers are widely variable within the limits of success. On the other hand, this summary of Harwood's researches carries the authority of the application of the scientific method to a field of endeavor which is difficult to reduce to exact terms. WILTON L. HALVERSON

Administrative Cost Analysis for Nursing Service and Nursing Education—*Report of Joint Committee of American Hospital Association and National League of Nursing Education. New York (1790 Broadway): National League of Nursing Education,* 1940. 202 pp. Price, $2.00.

As is so aptly emphasized on the title page, this book, sponsored by the American Hospital Association and the National League of Nursing Education, in coöperation with the American Nursing Association, is essentially the result of a study to develop methods for finding out the costs of nursing service and nursing education.

Members of boards of trustees of hospitals, hospital administrators, superintendents of nursing, and nursing educators have given considerable thought in the past to this subject. Nursing service and the conduction of nursing education within the environment of the same hospital is, of course, the common practice. In the furtherance of nursing education, student nurses must participate in bedside nursing care. Frequently to be expected criticism of the service rendered by the student nurse has raised the question as to the comparative costs and the advantages of graduate versus student nursing service. The question has also been raised as to the relative cost of the nursing service rendered by the hospital and the nursing education it carries on. The experience in the past has been the difficulty in arriving at these true costs. The utilization of the accounting methods outlined in this book will go far in answering these questions.

Fourteen representative hospitals were carefully selected as the background for this study, and a chapter is devoted to a comparative analysis in three of these hospitals, one in the East, one in the West, and one classified as a special hospital.

Adequate space is devoted to accounting problems encountered in attempting to determine true nursing costs, as well as the costs of carrying on nursing education.

Costs incurred in teaching students are presented, as well as the value of the service rendered by the student nurse. The variables in the policies of these three hospitals as factors in the determination of costs are listed. Among these are the size of the school, size of the hospital, remuneration received, vacations, fees paid by students, etc. All of this leads to the conclusion that costs of nursing service and nursing education are influenced by many varying factors.

Tables, exhibits, forms, and diagrams deal with the methods to be used in arriving at a true understanding of nursing costs, as well as those incurred in the conduction of nursing education.

This book is particularly recom-

mended as one which should be of interest and value to hospital superintendents, nursing administrators, directors of training schools for nurses, trustees of hospitals, and others interested in the costs of nursing care and in the education of the pupil nurse.

CHARLES F. WILINSKY

BOOKS RECEIVED

LEGAL GUIDE FOR AMERICAN HOSPITALS. By Emanuel Hayt and Lillian R. Hayt. New York: Hospital Textbook Co., 1940. 608 pp. Price, $5.00.

THE AMERICAN AND HIS FOOD. By Richard Osborn Cummings. Chicago: University of Chicago Press, 1940. 267 pp. Price, $2.50.

L. EMMETT HOLT: PIONEER OF A CHILDREN'S CENTURY. By R. L. Duffus and L. Emmett Holt, Jr. New York: Appleton-Century, 1940. 295 pp. Price, $3.00.

HEALTHFUL LIVING SERIES. Bulletin No. 1. Healthful Living Through the School Day and in Home and Community. By Nina B. Lamkin. Rev. Ed. Santa Fe: New Mexico State Department of Public Health, 1940. 103 pp. Price, $.25.

POPULATION TRENDS AND PROGRAMS OF SOCIAL WELFARE. New York: Reprinted from Milbank Memorial Fund Quarterly, 1940. 99 pp. Price, $.25.

LABORATORY MANUAL FOR PHYSICIANS: AIDS IN DIAGNOSIS AND TREATMENT. Issued by Division of Laboratories and Research, New York State Department of Health, Albany, N. Y. 1940. 103 pp.

PSYCHIATRIC SOCIAL WORK. By Lois Meredith French. New York: Commonwealth Fund, 1940. 344 pp. Price, $2.25.

THE VIRUS: LIFE'S ENEMY. By Kenneth M. Smith. New York: Macmillan, 1940. 176 pp. Price, $2.00.

COÖPERATION IN THE ADMINISTRATION OF TAX-SUPPORTED MEDICAL CARE. August, 1940. Chicago, Ill.: Committee on Medical Care, American Public Welfare Association. 32 pp. Price, $.20.

HUGH YOUNG: A SURGEON'S AUTOBIOGRAPHY. New York: Harcourt, Brace, 1940. 554 pp. Price, $5.00.

A SURGEON EXPLAINS TO THE LAYMAN. By M. Benmosché. New York: Simon & Schuster, 1940. 317 pp. Price, $3.00.

FROM INFANCY TO ADOLESCENCE: AN INTRODUCTION TO CHILD PSYCHOLOGY. By F. K. and R. V. Merry. New York: Harper, 1940. 330 pp. Price, $2.00.

FOOD VALUES OF PORTIONS COMMONLY USED. By Anna dePlanter Bowes. 3d Ed. Rev. Philadelphia: Author, 1940. 31 pp. Price, $1.00.

YOUTH LOOKS AT CANCER: A TEXT PREPARED FOR COLLEGES, PREPARATORY SCHOOLS, AND HIGH SCHOOLS. Bronxville, N. Y.: The Westchester Cancer Committee, 1940. 55 pp.

THE DOCTOR AND THE DIFFICULT CHILD. By William Moodie. New York: Commonwealth Fund, 1940. 214 pp. Price, $1.50.

CARNEGIE CORPORATION OF NEW YORK. Report of the President and of the Treasurer, 1940. 183 pp.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Good News—The National Institute of Health is organizing a new unit for research into some of the many problems of aging.

ANON. Unit on Gerontology in the National Institute of Health. Pub. Health Rep. 55, 46:2099 (Nov. 15), 1940.

Gathering in Air Raid Casualties—Procedures through which victims of air raids are given prompt medical care are described by a half dozen British medical officers of health. God grant that these gruesome details will never have more than academic interest for our sanitarians.

ANON. Experience Gained in Regard to Air Raid Casualties and Hospital Services. Pub. Health. 54, 1:5 (Oct.), 1940.

Toxoid Immunization for Adults—For the immunization of non-immune medical students, nurses, and other adults, a method is proposed by which those who are sensitive to toxoid may still be treated by that agent rather than by the use of toxin-antitoxin.

BUNCH, C. P., *et al.* Studies on the Immunization of Adults with Diphtheritic Toxoid. J. Immunol. 39, 5:27 (Nov.), 1940.

Doctors' Visits—A wealth of unusual information about how often, and for what causes, the doctor is called by sick people now is opened to you. For instance, you will learn that women, even when their genital and puerperal troubles are excluded, get 15 per cent more medical attention than do men. But when it comes to care by non-medical practitioners—osteopaths, chiropractors, *et al.*—the ladies charitably known as "over 21" are in their element, for they enjoy an excess of 82 per cent non-medical medical care over the same type of treatment given to men of equally tender years. Another curious phenomenon, though mothers are strong for non-medical medical care, children receive precious little of it.

COLLINS, S. D. Frequency and Volume of Doctors' Calls among Males and Females in 9,000 Families, Based on Nation-wide Periodic Canvasses, 1928–1931. Pub. Health Rep. 55, 44:1977 (Nov. 1), 1940.

The Ill-Housed Third—It is suggested that the public health nurse has a unique opportunity to discover insanitary and substandard housing conditions and to stimulate their correction by the appropriate social agency. It would seem a large order.

DUNN, M. J. The Housing Problem as It Affects Public Health Nursing Activities. Pub. Health Rep. 55, 42:1879 (Oct. 18), 1940.

Sex and Sickness—Disability rates for female employees are consistently higher than for males. If females suffered only from non-respiratory diseases their sickness rates would equal the rates covering all sickness and non-industrial injuries among males.

GAFAFER, W. M., and FRASIER, E. S. Studies on the Duration of Disabling Sickness. Pub. Health Rep. 55, 42:1892 (Oct. 18), 1940.

"No Justification for Complacency"—So begins this brief but comprehensive discussion of the cause, control, prevention, and care of scarlet fever. The paper, written for nurses, is commended to all.

GORDON, J. E. Public Health Practice in Scarlet Fever. Pub. Health Nurs. 32, 11:651 (Nov.), 1940.

Queer Doings—You can scarcely fail to be intrigued by the unaccountable shenanigans of the rickettsia of "Q" fever, which sneaked mysteriously about the corridors of a building of the National Institute of Health, unaccountably striking first this then that employee with a pneumonitis. Of course, the story is related in cold, matter-of-fact detail, but your imagination will readily weave it into a regular who-dun-it thriller.

HORNIBROOK, J. W., *et al.* An Institutional Outbreak of Pneumonitis. Pub. Health Rep. 55, 43:1936 (Oct. 25), 1940.

If War Come—Because cities have become the front line of battle, the civilian public health service can no longer be separated from military medical service. Psychiatry, nutrition, and epidemiology are now equally the province of wartime preventive medicine. Useful discussion of the last of these fields is included in this article.

JANEWAY, C. A. Wartime Preventive Medicine. New Eng. J. Med., 223, 21:854 (Nov. 21), 1940.

The Lead We Eat—It seems that one may consume 1 or 2 mg. of lead per day and still excrete so much of it that no poisoning will result. The lead one gets in ordinary foods and beverages will average about 0.3 mg. per day, so don't become too disturbed about the danger of lead poisoning from your food. This is worth remembering the next time a rumpus is raised about sprayed fruit.

KEHOE, R. A., *et al.* Experimental Studies on the Ingestion of Lead Compounds. J. Indust. Hyg. & Toxicol. 22, 9:381 (Nov.), 1940.

Saving Baby Teeth—A useful table showing the approximate ages at which the various deciduous teeth may be expected to be lost introduces this excellent discussion of oral hygiene for youngsters.

MORREY, L. W. Dental Care for the Preschool Child. Pub. Health Nurs. 32, 11:671 (Nov.), 1940.

More about Tuberculosis—Since the World War, the government has paid a billion dollars in compensation to tuberculous veterans. Two and a third army divisions have occupied hospital beds because of tuberculosis. It's about time we began to consider preventive measures pretty seriously which the papers in this symposium proceed to do ably.

MYERS, J. A., *et al.* Epidemiology of Tuberculosis (and two related papers). J.A.M.A. 115, 19:1609 (Nov. 9), 1940.

TB among Husbands and Wives—More women whose husbands had tuberculosis died of the disease than did a comparable group of women in the same locality. Deaths of husbands of tuberculous wives did not show the same significant increases from the disease. One negative x-ray picture taken a few months after the discovery of the initial case is not proof of freedom of infection.

PATERSON, J. F. Tuberculosis in Married Couples. Am. J. Hyg. 32, 3:67 (Nov.), 1940.

Control of GC—In studying the efficacy of sulfanilamide in the treatment of gonorrhea, it was found that more than half the patients lapsed treatment before observations could be completed. This may be one reason why gonorrhea is such a widespread disease. The distinguished committee urges better control of clinic patient attendance.

PELOUZE, R. S., *et al.* Gonorrhea in the Male. J.A.M.A. 115, 19:1630 (Nov. 9), 1940.

Hazards of the Open Road—If you wish to avoid accidents on country highways drive on any foggy Thursday during February or March between 5 and 8 in the morning. Choose

a crooked road, covered with snow, and you will have the best chance of reaching your destination alive and uninjured. These are some entertaining conclusions reached in a perhaps too brief perusal of an excellent article on highway safety.

POWERS, J. H. Automobile Accidents in a Rural Area Traversed by a Trans-Continental Highway. J.A.M.A. 115, 18:1521 (Nov. 2), 1940.

A Public Health Step-child—Rheumatic fever is responsible for four times the deaths that result from diphtheria, scarlet fever, measles, whooping cough, meningitis, and poliomyelitis combined. The reasons why the disease should be attacked through a comprehensive and adequate public health program are ably presented.

SWIFT, H. F. Public Health Aspects of Rheumatic Heart Disease. J.A.M.A. 115, 18:1509 (Nov. 2), 1940.

Skin vs. Hidden Cancer—If you are that *rara avis*, a fairly regular reader of this bibliography, you may remember earlier references to papers suggesting the protective value of skin cancers against more deadly internal forms. Well, here is an answer. "Cancer of the skin does not protect against the development of cancer elsewhere." People with skin cancer have definitely more cancer of organs other than the skin than are found in a similar population exhibiting no skin lesions.

WARREN, S., and GATES, O. Cancer of the Skin in Relation to Multiple Malignant Growths. J.A.M.A. 115, 20:1705 (Nov. 16), 1940.

Prostitution and Preparedness—Successful Canadian efforts to suppress commercialized prostitution as one venereal disease control method remind us of the ever-present problem here which is made the more pointed by our national preparedness projects. Are American local health departments as active in this field as is Vancouver?

WILLIAMS, D. H. Commercialized Prostitution and Venereal Disease Control. Canad. Pub. Health J. 31, 10:461 (Oct.), 1940.

ASSOCIATION NEWS

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Harold N. Brodersen, M.D., M.P.H., 670 S. Ferris Ave., Los Angeles, Calif., Communicable Disease Physician, Los Angeles County Health Dept.

Gerald F. Burgardt, M.D., Room 613, City Hall, Milwaukee, Wis., Deputy Commissioner of Health

M. L. Fuller, M.D., P. O. Box 1066, Amarillo, Tex., City Health Officer

Harry H. Hudson, M.D., Health Dept., Cleveland, Tenn., Director, Bradley County Health Dept.

Michel Jean-Marie LaSalle, M.D., Government Hospital, Port Saunders, Newfoundland, Medical Health Officer

Charles R. Reynolds, M.D., 412 S. Office Bldg., State Dept. of Health, Harrisburg, Pa., Director, Bureau of Tuberculosis Control

Myron P. Rudolph, M.D., Dr.P.H., Fort Knox, Ky., Surgeon, 5th Division, U. S. Army

Fannie I. Tomson, M.D., M.S.P.H., 82–68 164th St., Jamaica, L. I., N. Y., Health Officer-in-Training, New York City Health Dept.

Laboratory Section

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Harold C. Olson, Ph.D., Dept. of Dairying, Oklahoma A. & M. College, Stillwater, Okla., Professor of Dairy Manufacturing

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Beatrice H. White, M.A., Brooklyn College, Bedford Ave. & Ave. H, Brooklyn, N. Y., Teacher of Hygiene

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Rose Eilmann, R.N., State Dept. of Public Health, Nashville, Tenn., Nurse Consultant

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Ruth E. Church, M.D., 50 Haven Ave., New York, N. Y., Student, DeLamar Institute of Public Health

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Samuel J. Miller, Ch.E., DuBois Co., Cincinnati, Ohio, Chemical Director

Amos G. Stiker, D.D.S., Addison, N Y.

DECEASED MEMBERS

Ralph K. Collins, M.D., New York, N. Y., Elected Member 1935

Mrs. Florence W. Englesby, R.N., Pierre, S. D., Elected Member 1935, Elected Fellow 1938

Raymond Pearl, Ph.D., Baltimore, Md., Elected Member 1917

Elizabeth Stringer, Brooklyn, N. Y., Elected Member 1919, Fellow 1925

NEW FELLOWSHIP APPLICATION BLANK

WITH the recent adoption of new By-laws covering the qualification and election of Fellows, a revision of the Fellowship application blank has been prepared.

The new forms are now available in the Administrative Office, and it is suggested that members destroy any of the old forms that may be in their possession. Applications for Fellowship may be filed at any time before the closing date, August 1, in order to be considered at the 70th Annual Meeting in Atlantic City, October 14–17, 1941.

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Positions Wanted

ADMINISTRATIVE

Administrative public health or epidemiological position is desired by well qualified physician, with M.P.H. degree, 16 years' experience as county and city health officer, and 3 years' epidemiologist. **A206**

Experienced physician; graduate University of Illinois; M.P.H., Johns Hopkins, 1940; seeks administrative opening suitable to his proven ability. Excellent references. **A466**

Physician; M.P.H., Harvard; well experienced in city and rural health administration; will consider appointment as district health officer or in city or state health department. **A418**

Physician; M.D., Yale; M.S.P.H., Columbia; also short course for health officers, Vanderbilt; good clinical background; 3 years' public health experience; will consider appointment in child health, epidemiology or public health administration. **A350**

Physician; aged 39, excellent graduate training and experience in public health, specialized in tuberculosis and epidemiology, now employed, will consider position with salary of $4,500 or better. **A473**

Physician, aged 38; M.P.H., Harvard, 1932; experienced as director of county units and in state department of health; will consider administrative position. **A474**

Physician; graduate Columbia, 1919; Dr.P.H., Yale, 1938; specializing in child hygiene; experienced with community surveys; will consider administrative position or opportunity in child hygiene. **A475**

Physician; M.D., University of Cincinnati; with postgraduate training in venereal disease control; Johns Hopkins; is available as venereal disease control officer. **A363**

Physician, 32; M.D., 1936; postgraduate course in venereal disease control, experienced as district health officer and in organizing and publicizing syphilis control campaign; now employed in charge venereal disease clinics in metropolitan health department; seeks venereal disease control post with opportunity to organize or administer program. **A437**

Physician; with C.P.H., Johns Hopkins, and some field experience with large state health department, wishes position in epidemiology or administration. **A443**

HEALTH EDUCATION

Young woman; Ph.D., Columbia University; splendid background of experience in health education; will consider position as director of public health education. **H294**

Well qualified woman physician, M.A. and M.D. from Stanford; with 6 years' experience in nationally known secondary school in health education and medical advisory duties; wishes position in college health work. **H448**

Public health nurse; M.A., Columbia, experienced in teaching health education and public health nursing; wishes teaching position in college or university, summer of 1941. **H472**

LABORATORY

Teaching, executive or administrative position desired by experienced teacher in bacteriology and public health; Ph.D., Cornell; now professor in grade A medical school. **L327**

Experienced woman bacteriologist; Ph. D., University of Illinois, 1937; wishes position in teaching or research. Excellent bibliography and references. **L410**

Experienced bacteriologist; young man of 33, Sc.B., who for several years has been in charge of state laboratory doing public health and diagnostic bacteriology, immunology and serology, will consider opening. **L427**

SANITARY ENGINEERING

Engineer, aged 38; 3 years' experience as district sanitarian supervisor, state department of health, together with work on plumbing, heating and ventilation; will consider position in the plumbing and heating field or state department of [illegible]th. Prefers middle western or western states. **E453**

Public health engineering position desired by man with M.S. in Sanitary Engineering from Harvard, and 7 years experience, including 4 years with state department as assistant engineer. **E468**

Advertisement

Opportunities Available

INDUSTRIAL HYGIENIST—State department of health; must be exceptionally qualified; South. PH1–1, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

COUNTY HEALTH PHYSICIANS—(a) Several for central state; $4,000–$4,200, plus travel allowance. (b) Several for southern state; training available to physicians interested but not trained in public health. (c) County health physician for desirable Montana location; estimated annual income $5,000; private practice privileges; beautiful, healthful country; fine type of people. No. PH1–2, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

CITY HEALTH PHYSICIAN—(a) Large central metropolis; duties include investigating communicable disease cases and contacts, immunizing children against diphtheria and smallpox, physical examinations of school children and holding well-baby clinics for infants and children of pre-school age; $2,700, increasing; city will furnish gasoline for car. (b) Virgin Islands; married physician with general practice experience required; $2,400. No. PH1–3, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

STUDENT HEALTH PHYSICIANS—(a) Immediately for fairly large western school; about $3,000. (b) September 1941; four-year appointment with university health service combining training in public health or other specialty, leading to Master's degree, with departmental duties. No. PH1–4, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

INSTRUCTOR IN PUBLIC HEALTH NURSING—Graduate nurse with M.S. or B.S. degree, certified in public health nursing, to serve as major instructor in public health nursing to graduate nurses taking degree and certificate courses in this specialty; salary commensurate with experience. No. PH1–5, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

CHILD HEALTH CONSULTANT—State department of health; certified public health nurse with B.S. degree and special preparation in maternity, plus supervising experience; $200, travel expenses. No. PH1–6, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH NURSING SUPERVISORS—(a) County health department; actual experience as public health nurse and supervisor required; $175, plus travel budget. (b) County health department; degree and supervising experience in health department required; staff of eight; $1,700. PH1–7, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

EMERGENCY DEPARTMENT SUPERVISOR—Eastern hospital of 500 beds; degree and experience in managing an emergency department desirable; excellent opening. No. PH1–8, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—For interesting appointment in rural nursing program of western state. No. PH1–9, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—Must be qualified to teach a generalized program to students; $150, plus car maintenance; vicinity Chicago. No. PH1–10, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH NURSES—Several certified public health nurses for city health department; community of over a hundred thousand population; $125–$150. No. PH1–11, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

SCHOOL NURSE—To serve under direction county health department; immediately; Florida. No. PH1–12, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

BACTERIOLOGIST—City health department; work includes milk and water bacteriology, some chemical tests on milk, preparation of necessary media, stains and reagents, diagnostic bacteriology of smears, throat cultures, sputum, Widal reaction, darkfield preparations, some food analysis with identification of organisms found therein and examination of spinal fluid; no serology necessary; around $150; midwest. No. PH1–13, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

Situations Wanted

PUBLIC HEALTH PHYSICIAN — Certified public health physician is available; bachelor's and medical degrees from southern university; C.P.H., Johns Hopkins; four years, director student health service, state university; five years, executive position with state health department. No. PH1–16, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH PHYSICIAN—Young physician would like public health appointment enabling him to use his special training in obstetrics; following rotating internship had four years' training in obstetrics and gynecology; in private practice since September; prefers full-time public health appointment in maternity work. No. PH1–17, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

BACTERIOLOGIST—A.B., Ph.D., state university; six years, university laboratory of animal pathology; four years, parasitologist, state department public health. No. PH1–15, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—Graduate of an eastern training school; B.S. degree in Public Health Nursing, Columbia; ten years, director of nurses, public health nursing association; five years, field supervisor, large industrial company; three years, educational director and supervisor, Visiting Nurse Association; previous executive appointment in public health nursing. No. PH1–14, Medical Bureau (M. Burneice Larson, Director), Palmolive Building, Chicago.

NEWS FROM THE FIELD

FIRST MUSEUM OF HEALTH IN THE UNITED STATES OPENS

ON November 12, the Cleveland Health Museum, the first of its kind organized in the United States, was formally opened with a distinguished group of Cleveland citizens and out-of-town guests in attendance. Dr. Benjamin G. Horning, Assistant Field Director of the Association, brought congratulations in the name of the American Public Health Association and presented a certificate of Fellowship to Dr. Bruno Gebhard, the Director of the Museum.

Among other organizations which were officially represented at the opening were the American Dental Association, the American Medical Association, the Ohio State Health Department, American Museum of Health, United States Public Health Service, Cleveland Academy of Medicine, Cleveland Dental Society, and Cleveland Public Health Department.

The purposes of the Cleveland Museum of Health are stated to be:

To spread definite knowledge of unquestioned accuracy.

Lead more people to a better understanding of the progress in medical science.

Sharpen consciences with respect to public health.

Be a center for health education technics.

Be a center of research on problems of personal health and hygiene.

Emphasize mental, as well as physical hygiene, showing how we can better live together in our family and community life.

One hundred and thirty-three exhibits were on display at the opening, the majority constructed in the Museum's own shop. Many dealt with general and specific anatomical subjects, and others bore such titles as "Fitness for Defense," "Safe Maternity," "Progress in Medicine," and "Posture." A limited edition of souvenir booklets of the opening include descriptive titles of the 133 exhibits, and while the supply lasts, copies may be obtained from the Museum.

CANADIAN PUBLIC HEALTH ASSOCIATION OFFICERS, 1941

THE following officers of the Canadian Public Health Association for 1941 were elected at their 29th Annual Meeting, held in Winnipeg, Manitoba, September 19–21, 1940:

Honorary President—The Hon. Henri Groulx, Minister of Health and Provincial Secretary, Province of Quebec.

President—Dr. Jean Gregoire, Deputy Minister, Ministry of Health, Province of Quebec.

Vice-Presidents—Dr. Grant Fleming, Montreal; Dr. J. J. McCann, Renfrew; Dr. B. T. McGhie, Toronto; Dr. Arthur Wilson, Saskatoon.

Honorary Secretary—Dr. J. T. Phair, Toronto.

Honorary Treasurer—Dr. A. L. McKay, Toronto.

Chairman of the Editorial Board—Dr. R. D. Defries, Toronto.

Executive Committee—Dr. Gordon Bates, Toronto; Dr. H. C. Cruikshank, Toronto; Dr. D. V. Currey, St. Catharines, Ont.; Dr. R. O. Davison, Regina; Dr. R. D. Defries, Toronto; Dr. Grant Fleming, Montreal; Dr. D. T. Fraser, Toronto; Dr. Jean Gregoire, Quebec; Dr. A. L. McKay, Toronto; Dr. J. T. Phair, Toronto; Dr. G. D. Porter, Toronto; Dr. R. E. Wodehouse, Ottawa.

INCREASE OF COMMUNITY CHEST FUNDS

COMMUNITY Chests and Councils, Inc., New York, N. Y., announced on November 1 that 75 Community Chests have raised $13,686,000 for 1941, an increase of 2.9 per cent over the total raised by the same Chests for 1940. Two-thirds of the Chests were over the top, some by more than a 5 per cent margin, and the average for the 75 as a whole is 99.4 per cent of the goal.

PUBLIC HEALTH NURSING CURRICULUM STUDY — ITS PURPOSE, SCOPE AND PROGRESS

A PUBLIC health nursing curriculum study was launched in February, 1940, as a joint enterprise of the National Organization for Public Health Nursing and the U. S. Public Health Service. There are at the present time 26 universities or colleges in this country which are offering approved public health nursing programs of study for graduate nurses. In view of the rapid advances and shifts of emphasis in the fields of medical, public health, and allied sciences, a need was recognized by those primarily concerned with public health nursing education for: (1) reëvaluating and re-defining objectives and functions in the field of public health and of public health nursing; and (2) the subsequent revision of public health nursing curricula in terms of present-day needs and trends.

The National Organization for Public Health Nursing, in its endeavor to promote such a study, requested the assistance of one of the public health nursing consultants of the U. S. Public Health Service to direct this project, and in response to this request, on February 19, 1940, Mary J. Dunn was assigned to this study. A working committee and an advisory committee * were then appointed by the N.O.P.H.N. and the U. S. Public Health Service; the former, to define the scope and objectives and to give general direction to the study; the latter, to advise the working committee and to interpret the objectives and progress of the study to interested individuals and groups.

In order to reach some logical agreement relative to the professional content of a public health nursing curriculum, it was proposed to outline the public health objectives pertaining to each functional area (for example: maternal health, tuberculosis control), and, in the light of these objectives, to redefine the functions of the public health nurse. These newly defined objectives and functions will, in turn, serve as the bases or guide posts for the revised curriculum content.

A tentative draft of public health objectives and public health nursing functions pertaining to 16 functional areas has been prepared by Miss Dunn, in collaboration with various specialists in the respective fields, and was approved by the working committee at its meeting in Detroit, October 5, 1940.

The next step proposed by the working committee is the appointment of 16 production committees to correspond to the 16 functional areas previously agreed upon. Each production committee, in consultation with advisers in allied or special fields, will be responsible for the preparation of an assigned unit of instruction. These production committees are to be composed of public health nurses, and are to center geographically about the 26 universities or colleges now offering approved public health nursing programs of study. Representation on these committees is to include the respective public health nursing programs of study, and also urban, rural, official and non-official public health agencies, located within a reasonable radius of the university or college so as to facilitate working arrangements and travel.

* The membership of these committees will be found in *Pub. Health Nurs.*, 32:208 (Mar.), 1940.

SOUTH AMERICAN CONFERENCES

TENTATIVE dates for South American meetings are as follows:

Fourth Pan American Conference of Directors of Public Health. Rio de Janeiro, Brazil; 1942.

Fourth Pan American Conference of Leprology. Rio de Janeiro, Brazil; 1945.

Eighth Congress of the Pan American Medical Association. Buenos Aires, Argentina; 1941.

HEALTH FILMS FOR LAY AUDIENCES

A CATALOGUE of Sources of Health Films for Lay Audiences has been published by the National Health Council and may be purchased at $.10 per copy from the Council, 1790 Broadway, New York, N. Y. The sources are limited to those of nation-wide distribution and to 16 mm. prints of motion pictures on given health subjects. The table of contents includes: Subject-Source Index, List of Sources, Films Produced by State Departments of Health, Film Libraries for Schools and for General Educational Purposes, and Catalogs.

SUFFOLK COUNTY, N. Y., ESTABLISHES MENTAL HYGIENE DIVISION

A DIVISION of Mental Hygiene will be established in the Suffolk County Department of Health, according to a recent announcement, from Riverhead, N. Y.

The personnel will consist of a psychiatrist, psychologist, and two psychiatric social workers, together with a clerk.

The unit will be ready to function about the 1st of January, 1941.

ILLINOIS PUBLIC HEALTH ASSOCIATION ORGANIZED

THE Illinois Public Health Association, which proposes to apply for affiliation with the American Public Health Association, was organized at Springfield, December 5, 1940, at a special meeting called in conjunction with the annual Illinois Conference on Public Health. Constitution and by-laws were adopted and officers elected. The officers and members of the governing council of the new association include the following:

President—Arlington Ailes, M.D., Health Officer of LaSalle, Peru, and Oglesby
Vice-President—B. K. Richardson, Chief, Division of Public Health Instruction, State Department of Public Health
Secretary-Treasurer—Howard A. Orvis, M.D., Health Officer of Winnetka

ILLINOIS CONFERENCE ON PUBLIC HEALTH

THE 16th annual Illinois Conference on Public Health, held in Springfield, December 5–6, 1940, attracted more than 600 delegates, mostly health officers, public health nurses, sanitary engineers, laboratory technicians, and milk sanitarians. Among those on the program were:

Harry S. Mustard, M.D.—Columbia University, New York, N. Y.
Benjamin G. Horning, M.D.—Associate Field Director, A.P.H.A.
Halbert L. Dunn, M.D.—U. S. Bureau of the Census, Washington, D. C.
J. Ernestine Becker—Johns Hopkins University, Baltimore, Md.
Louise Knapp, R.N.—Washington University, St. Louis, Mo.
H. A. Holle, M.D.—U. S. Public Health Service, Washington, D. C.
Richard E. Shope, M.D.—Rockefeller Institute for Medical Research, New York, N. Y.
W. F. Walker, Dr.P.H.—The Commonwealth Fund, New York, N. Y.
Bert I. Beverly, M.D.—Rush Medical College, Chicago, Ill.
D. C. Elliott, M.D.—U. S. Public Health Service, Washington, D. C.

FLORIDA PUBLIC HEALTH ASSOCIATION ELECTS OFFICERS

THE Florida Public Health Association held its Twelfth Annual Meeting in Tampa, December 5–7. The following officers were elected for 1941:

President—L. J. Graves, M.D.
1st Vice-President—J. S. Spoto, M.D.
2nd Vice-President—Mrs. Mary Matthews
Secretary-Treasurer—Edward M. L'Engle, M.D.

and for the Board of Directors:

Dr. A. P. Black, Mrs. Jean Henderson, George N. MacDonell, M.D., Katherine Corbin, F. V. Chappell, M.D., A. B. McCreary, M.D., with the four officers.

Mark F. Boyd, M.D., of Tallahassee, was selected as representative to the Governing Council of the A.P.H.A., with Dr. J. R. McEachern, of Tampa, alternate.

LILLIAN D. WALD MEMORIAL SERVICES

LILLIAN D. WALD, founder of the Henry Street Settlement and of the Visiting Nurse Service of New York, who died September 1, was honored at a memorial service in Carnegie Hall on December 1, which was attended by twenty-five hundred persons. The Association was officially represented by Dr. Louis I. Dublin.

Tribute was paid to Miss Wald in addresses and messages from high officials of the nation and friends, led by President Roosevelt. The President's telegram declared that "The Henry Street Settlement with its superb record in bringing light to dark places and joy to hearts that had known only sorrow is her true monument."

Miss Wald was lauded by the speakers, among whom were Mary Beard and Professor C.-E. A. Winslow, for helping New York State to enact the first labor code in the country, for advocating extension of benefits of workmen's compensation in cases of occupational disease, the widows' pension system and the issue of bonds to raise money for the chain of state hospitals for the insane.

The entire personnel of the Visiting Nurse Service of New York, 265 nurses, attended the services in uniform.

NEW SOCIAL HYGIENE CLINICS

THREE free social hygiene clinics have been opened in Cook County, Chicago, Ill., through funds obtained under the National Venereal Disease Control Act.

The clinics are in the Berwyn, Maywood, and Robbins Health Centers. Additional clinics will be opened soon in Cicero, Harvey, and Chicago Heights.

WEST VIRGINIA PUBLIC HEALTH ASSOCIATION ELECTS OFFICERS

AT its Annual Meeting, held in Morgantown early in November, the West Virginia Public Health Association elected the following officers for 1941:

President—Edward G. McGavran, M.D., Morgantown
1st Vice-President—John D. Spiggle, Point Pleasant
2nd Vice-President — Cecelia Robrecht, Wheeling
Secretary-Treasurer — Dorothea Campbell, Charleston

CUBAN GOVERNMENT HONORS DR. MC CREARY AND DR. UPCHURCH

DECORATIONS of the Order of Carlos J. Finlay were presented to Dr. A. B. McCreary, State Health Officer of Florida, and Dr. Noble Upchurch, Health Officer of Jacksonville, Fla., at the 12th Annual Meeting of the Florida Public Health Association, held in Tampa, December 5–7. The decorations were presented on behalf of the Cuban Government by Dr. Felix Hurtado, Assistant Secretary of Health of Cuba.

PERSONALS

Central States

RICHARD F. BOYD, M.D.,† Assistant Director of Child Hygiene, State Department of Health, Topeka, Kans., has been appointed Director of Local Health, a position left vacant since the death of ROLLA B. STAFFORD, M.D.† PAUL R. ENSIGN, M.D.,† of Sparta, Ga., has resigned as Director of the Child Health Demonstration in Hancock County, to become Assistant Director of Child Hygiene in Topeka, succeeding Dr. Boyd.

JOHN A. COWAN, M.D.,† formerly of Bismarck, resigned his position as Director of the Division of Preventable Diseases, North Dakota State Department of Health, effective October 31. On November 2, he began his new duties as Medical Director of Woodbury County Health Department, Sioux City, Ia.

† Member A.P.H.A.

DR. OTTO K. ENGELKE, of West Union, Ohio, has resigned as Health Officer of Adams County, to join the Kellogg Foundation, Battle Creek, Mich.

HARRY H. ENNIS, M.D., C.P.H.,† of LeMars, Ia., formerly Medical Director of District Number 1, has been placed in charge of the Northeastern Iowa Health Unit, with offices in Decorah.

DR. SEYMOUR FISHER, recently Medical Director of the Soldiers' and Sailors' Children's School Hospital, of Normal, Ill., has been appointed Superintendent of the Division for Handicapped Children in the Illinois State Department of Public Welfare, Springfield. He succeeds DR. PAUL H. HARMON, who resigned late in 1939.

LLOYD J. FLORIO, M.D., M.P.H.,† recently associated with the W. K. Kellogg Foundation in Calhoun County, Marshall, Mich., has been appointed Associate Professor of Preventive Medicine at the University of Colorado School of Medicine, in Denver.

CHESTER A. HICKS, M.D.,† formerly of Ann Arbor, Mich., has been elected Commissioner of Health for the district comprising Bleckley and Dodge Counties, with headquarters in Eastman, Ga. The formation of this district necessitates transferring Dodge County from the Southeastern to the East Central health region.

DR. LYMAN F. HUFFMAN, of Cleveland, Ohio, has been appointed a member of the Ohio Public Health Council, to succeed DR. CLYDE L. CUMMER, of Cleveland, resigned.

DR. JONAS L. HURST, of Dorset, Ohio, has resigned as Health Officer of Ashtabula County.

GEORGE D. LUMMIS, M.D.,* has recently celebrated his golden anniversary as Health Officer of Middletown, Ohio.

DR. FRANCIS E. MAHLA, of Marion, Ohio, has been appointed Health Officer of Sandusky and Erie County, to succeed the late FREDERICK M. HOUGHTALING, M.D.* Dr. Mahla was formerly Assistant State Health Director.

DR. HARRY A. NEISWANDER, of Pandora, Ohio, has been appointed Health Commissioner of Putnam County, succeeding DR. LOUIS M. PIATT, of Ottawa, resigned.

DR. WOODROW L. PICKHARDT, formerly of Chicago, has been appointed Health Officer of a new unit in Creek County, with headquarters in Sapulpa, Okla.

EDWARD D. RICH, C.E.,* of Lansing, Mich., associated with the State Department of Health for 29 years and for 27 years Director of the Bureau of Engineering, has retired. JOHN M. HEPLER, C.E.,* with the Department since 1919, has been appointed to succeed him.

DR. ROBERT J. SCHNECK has been appointed to the Public Welfare Commission of Detroit, Mich., succeeding DR. FREDERICK H. COLE.

RICHARD SEARS, M.D.,† of Fremont, Mich., Director of the Tri-County Health Unit composed of Newaygo, Oceana, and Lake Counties since October, 1938, has been named Director of the Muskegon County Health Department, succeeding REUBEN J. HARRINGTON, M.D.†

LIEUT. WILLARD S. SITLER † is on military leave from his position as Sanitary Engineer at the St. Joseph County Health Department, Michigan, and is working on design and construction of Sanitary Sewers and Sewage Treatment Plant for a new cantonment area.

Eastern States

EARNEST M. MORRIS, M.D., C.M.,

* Fellow A.P.H.A.
† Member A.P.H.A.

C.P.H.,* of Westfield, Mass., has been appointed Director of Public Health in Newton, Mass. Dr. Morris has been serving as District Health Officer for the Massachusetts Department of Public Health with headquarters at Westfield State Sanatorium. He succeeds HAROLD D. CHOPE, M.D., DR.P.H.,* who has recently accepted a 3 year Rockefeller Foundation fellowship at Harvard University and Harvard School of Public Health. CHARLES E. GILL, M.D.,† associated with the Massachusetts Department of Public Health in various capacities since 1932, has succeeded to the duties of the Westfield District Office.

JAMES A. TOBEY, DR.P.H.,* of New York, N. Y., has been appointed chairman of the committee on food and nutrition in national defense of the Institute of Food Technologists. Dr. Tobey is Director of the Department of Nutrition of the American Institute of Baking, and is also a lieutenant colonel in the Sanitary Corps Reserve of the Medical Department of the Army. The Institute of Food Technologists was organized as a professional society in 1939, and now has more than 900 members throughout the United States.

GUSTAV TUGENDREICH, M.D.,† of Bryn Mawr, Pa., is engaged on a research on child welfare in Montgomery County, under the joint sponsorship of the Social Economy Department of Bryn Mawr College and the Department of Public Health.

OLIVER E. TURNER, M.D., M.P.H.,† has been appointed in charge of a new Health District for Allegheny County outside Pittsburgh, with offices in the Falk Clinic.

JOHN H. WATKINS, PH.D.,* has been promoted to the position of Associate Professor in Public Health, Yale University School of Medicine, effective January 1, 1941, according to an announcement of the President of the University.

* Fellow A.P.H.A.
† Member A.P.H.A.

Southern States

DR. WILLIAM R. ARMSTRONG has been appointed in charge of the new health unit which has been established in Tishomingo County, with headquarters in Iuka, Miss.

JAMES T. BELL, M.D., of Woodward, Okla., has been appointed Director of the Department of Maternal and Child Health in the State Department of Health, succeeding PAUL J. COLLOPY, M.D.,† of Oklahoma City, who resigned to join the staff of the Children's Hospital, Seattle, Wash.

WILLIAM F. BELL, M.D.,† of Bay Springs, Miss., has been appointed Director of the new District Health Unit which has been established, comprising Jasper and Smith Counties, with offices at Raleigh and Bay Springs.

WILLIAM A. BLAKE, M.D., formerly of Blountville, Tenn., has been appointed Health Officer of Washington County, Chatom, Ala., succeeding THOMAS T. BOX, M.D.†

THOMAS T. BOX, M.D.,† Health Officer of Washington County, with headquarters in Chatom, Ala., has been appointed in charge of Choctaw County, with offices in Butler. He succeeds DAVID B. SNELLING, M.D., who went to Green County.

DR. MILDRED E. BURTON, of Berea, Ky., has been appointed Health Officer of Owsley County.

DR. NEIL E. COMPTON, of Warren, Ark., has been appointed Director of the Bradley County Health Unit.

DR. ISEE L. CONNELL, of Birmingham, Ala., has been appointed Health Officer of Cleburne County, succeeding DR. FRANK R. WOOD, of Heflin, whose term expired.

ROBERT WEBSTER CROWELL, M.D., of

Mullins, S. C., has been appointed Health Officer in Chilton County, succeeding SAMUEL D. STURKIE, M.D., C.P.H.,† of Clanton, Ala., who resigned to join the Virginia State Department of Health with headquarters in Charlottesville.

HUGH S. CUMMING, M.D.,† Director of the Pan American Sanitary Bureau, Washington, D. C., has recently been elected President of the Gorgas Memorial Institute.

DR. JULIAN W. DAVIS, of O'Donnell, Tex., has been appointed Health Officer in charge of Henry County, Ala., succeeding DR. GEORGE E. MADDISON, who resigned to offer his services to the Canadian Army.

DR. LOUIS K. HUNDLEY, of Warren, Ark., formerly Health Director of Bradley County, has been assigned to the Trachoma Control Service of the State Board of Health.

DR. JOHN BOLLING JONES, of Petersburg, Va., has been appointed a member of the State Board of Health, Richmond.

DR. JOSEPH H. KING, of Summerton, S. C., has been appointed Health Officer of Chester County, to succeed DR. YEADON M. HYER, recently transferred to Hampton and Allendale Counties.

DR. EDWARD W. KISSEL, of Paintsville, Ky., has been named Health Officer of Lawrence County, with headquarters at Louisa.

DR. GARDNER H. LANDERS, of Texarkana, Ark, has been appointed Health Director for Independence County.

DR. HAROLD W. LONG, of Milledgeville, Ga., has been appointed Director of the Crippled Children's Division of the State Department of Public Welfare.

DR. LLOYD W. LUTTRELL, of Spartanburg, S. C., has been named Health Officer of Pickens County.

BERT H. MALONE, M.D., C.P.H.,† of Waycross, Ga., has resigned as Medical Director of the Southeastern Health Region.

HENRY E. MELENEY, M.D.,* Associate Professor of Preventive Medicine and Public Health, at the Vanderbilt University School of Medicine, has been appointed Hermann M. Biggs Professor of Preventive Medicine and Director of the Laboratories of Preventive Medicine at the New York University College of Medicine, succeeding HARRY S. MUSTARD, M.D.*

DR. WILLIAM G. MORGAN, of Cadiz, Ky., Health Officer of Trigg and Lyon Counties, has been appointed Health Officer of Daviess County, with headquarters in Owensboro. He succeeds DR. WILLIAM LEE TYLER, JR., who has been part-time Health Officer.

DR. EWING M. NIXON, of Little Rock, Ark., has been appointed Director of the Mississippi County Health Unit, with headquarters at Blytheville. He succeeds ROY E. SCHIRMER, M.D.†

ELDRIDGE T. NORMAN, M.D.,† Health Officer of Marengo County, has been appointed in charge of Hale County, with headquarters in Greensboro, Ala., succeeding BENJAMIN M. DRAKE, M.D.,† who resigned recently.

DR. MARION L. SHADDIX, of Phenix City, Ala., Health Officer of Russell County, has been appointed in charge of Clay County.

ARTHUR M. SHELAMER, M.D., C.P.H.,† of Athens, Ala., has been appointed Health Officer in temporary charge of the Limestone County Health Unit, succeeding FRANK M. HALL, M.D.,† of Athens, who resigned for a year's study at Johns Hopkins School of Hygiene and Public Health.

DR. RALPH E. WEDDINGTON, formerly of Fort Smith, Ark., has been named

* Fellow A.P.H.A.
† Member A.P.H.A.

Medical Director of District No. 17, with headquarters at Melbourne.

Western States

DR. RUSSEL L. BAKER, of White County, Wash., has been appointed Health Officer for Klickitat County.

DR. RALPH M. DEBIT, of Kennewick, Wash., has been appointed Health Officer and County Physician of Benton County, succeeding the late DR. LEGRAND SPAULDING.

J. C. GEIGER, M.D.,* Director of Public Health of the City and County of San Francisco, has been notified by the Consulate General of Mexico that the Mexican Government has "officially recognized his distinguished services in his field" and conveys "gratitude and appreciation of his work."

HOWARD L. MCMARTIN, M.D.,† of Boise, Idaho, has resigned as Director of Public Health of Idaho and has accepted a position as Director of Health of Maricopa County, Ariz.

FREDERICK P. PERKINS, M.D.,† of Phoenix, Ariz., recently appointed Secretary and State Superintendent of Public Health, left with the 158th Infantry of the Arizona National Guard for training camp at Fort Sill, Okla., on September 23.

JAMES R. SCOTT, M.D., PH.D.,* of Albuquerque, N. M., has been appointed State Director of Public Health. The position has been vacant for several months since EDWIN B. GODFREY, M.D.,† resigned because of ill health.

JAMES F. WORLEY, M.D.,† Senior Surgeon, U. S. Public Health Service, Medical Director of the Alaska Division of the Indian Medical Service, Juneau, has been transferred to Minneapolis as Medical Director of District No. 1, comprising the states of Michigan, Wisconsin, Minnesota, Iowa, Nebraska, and North and South Dakota.

Canada

ROBERT D. DEFRIES, M.D.,* has been appointed Director of the School of Hygiene and of the Connaught Laboratories, University of Toronto, Toronto, Ont. During the past 25 years he has been prominent in the work of these two institutes, having become associated early in 1915 with the late J. G. FITZGERALD, M.D.,* whom he now succeeds. Dr. Defries is Vice-President of the American Public Health Association.

* Fellow A.P.H.A.
† Member A.P.H.A.

CONFERENCES AND DATES

American Association of Schools of Social Work. Chicago, Ill. January 30–February 1.

American Camping Association — 18th Annual Convention. Wardman-Park Hotel, Washington, D. C. February 13–15.

American College of Physicians—25th Annual Session. Statler Hotel, Boston, Mass. April 21–25.

American Library Association. Midwinter Conference, Chicago, Ill., December 27–30. Annual Meeting, Boston, Mass., June 19–25.

American Medical Association — 92nd Annual Meeting. Cleveland, Ohio. June 2–6.

American Orthopsychiatric Association —18th Annual Meeting. Theme: Behavior and Its Disorders. Hotel Pennsylvania, New York, N. Y. February 20–22.

American Public Health Association—70th Annual Meeting. Convention Hall, Atlantic City, N. J. October 14–17.

American Society of Civil Engineers. Winter Meeting—New York, N. Y., January 15–18. Spring Meeting—Baltimore, Md., April 23–26.

American Society of Heating and Ventilating Engineers—47th Annual Meeting. Hotel Muehlebach, Kansas City, Mo. January 27–29. (Summer Meeting—San Francisco, Calif., June 16–20.)

American Water Works Association—61st Annual Convention. Royal York Hotel, Toronto, Ont., Canada. June 22–26.

New York Section—Syracuse, N. Y. March 27–28.

Indiana Section—Indianapolis, Ind. April 24–25.

Ohio Section—Cincinnati, Ohio. May 15–16.

Pacific Northwest Section—Seattle, Wash. May 8–10.

Southeastern Section — Charleston, S. C. May 12–14.

Southwest Section—Fort Worth, Tex. October 13–16.

Four States Section—Baltimore, Md. November 6–7.

Child Labor Day. Sponsored by the National Child Labor Committee. 36th Annual Observance. Jan. 25–27.

Colorado Public Health Association. La Junta, Colo. May.

Congress on Industrial Health—Third Annual—sponsored by the American Medical Association. Palmer House, Chicago, Ill. January 13–14.

Florida Public Health Association. Orlando, Fla. December, 1941.

Greater New York Dietetic Association. Lecture by Robert R. Williams, Sc.D., on: "The Evolution of Man's Dietary Requirements." The Academy of Medicine, 2 East 103rd Street, New York, N. Y., February 4 (8.30 P.M.).

Group Health Federation of America—Third Annual Convention. Los Angeles, Calif. June.

Heating, Piping & Air Conditioning Contractors National Association. San Francisco, Calif. June 16–20.

Industrial Public Health Nursing Services Symposium. Hotel Wisconsin, Milwaukee, Wis. February 20–22.

Massachusetts Public Health Association. January 30.

Michigan Public Health Association. Grand Rapids, Mich. November 12–14.

Missouri Public Health Association. St. Louis, Mo. April.

National Public Housing Conference. New York, N. Y. January 24–26.

New Mexico Public Health Association. Gallup, N. M. October.

Ohio Federation of Public Health Officials. Columbus, Ohio. May 23.

Pacific Heating and Air Conditioning Exposition. Exposition Auditorium, Civic Center, San Francisco, Calif. June 16–20.

Smoke Prevention Association of America, Inc.—35th Annual Convention. Ansley Hotel, Atlanta, Ga. June 3–6.

Social Hygiene Day—Fifth National. February 5.

Society of Illinois Bacteriologists—Winter Meeting. Board of Trade Building, Chicago, Ill. January 31.

Southern California Public Health Association. Los Angeles, Calif. January.

Tennessee Public Health Association. Nashville, Tenn. May.

Western Branch, American Public Health Association — 12th Annual Meeting. San Diego, Calif. May 26–30.

Foreign

International College of Surgeons. Mexico City, Mexico. August 10–13.

Pan American Medical Association—8th Congress. Buenos Aires, Argentina. 1941.

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